



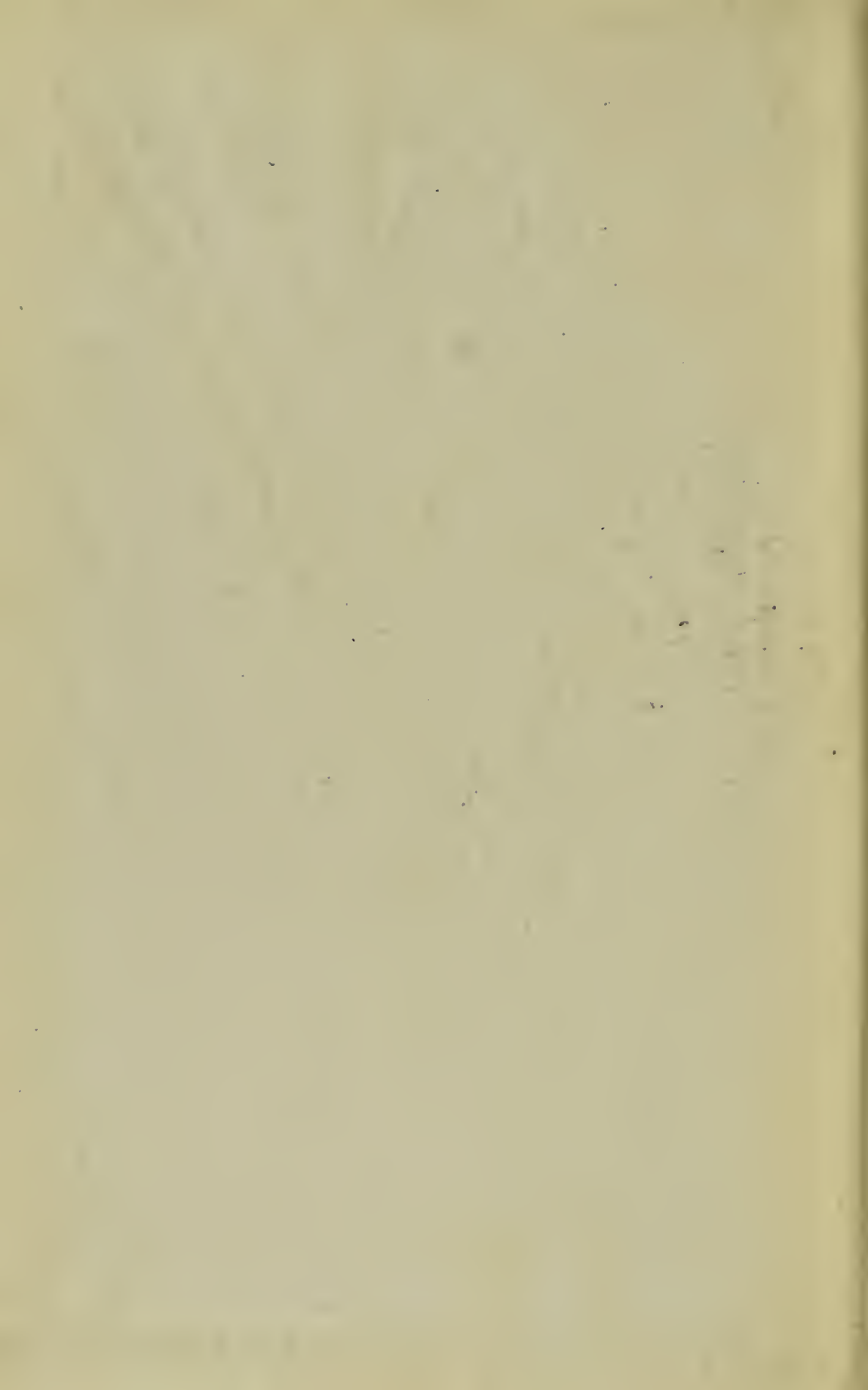
County Palatine of Chester.

REPORT OF THE Medical Officer of Health FOR THE YEAR 1913.

BY
MEREDITH YOUNG, M.D., D.P.H.,
Of Lincoln's Inn, Barrister-at-Law.

PRESENTED TO THE
Public Health & Housing Committee
OF THE COUNTY COUNCIL,
July 17th, 1914.

CHESTER:
PHILLIPSON AND GOLDER, PRINTERS, EASTGATE ROW AND FRODSHAM STREET.





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Medical Officer of Health,
For the Year ending December 31st, 1913.

*To the Public Health and Housing Committee of the
County Council of the County Palatine of Chester
and to the Members of the County Council.*

PREFATORY NOTE.

CHESTER,

July 26th, 1914.

*To the Chairman and Members of the
Public Health Committee of the
Cheshire County Council.*

MR. CHAIRMAN AND GENTLEMEN,

I have the honour to present to you my Report on the Health of the Administrative County during the year 1913, together with extracts from the Reports of the District Medical Officers of Health, Surveyors and Inspectors of Nuisances.

Owing to the extraordinary interference with routine work recently occasioned by prolonged special inquiries, Parliamentary Bills and the like, it has been a matter of the greatest difficulty to prepare this Report so that it might be presented at the usual time. Had it not been for the handsome sacrifices of my Office Staff, who have worked early and late without a murmur, this Report must necessarily have been delayed for three months. As it is I have had to forbear the discussion of many topics which I would like to have brought before the notice of your Committee.

From the statistical portion of the Report your Committee will see that the birth-rate has maintained the same level as that of the previous year and that there is no evidence so far of its tending anything but downwards. The general death-rate is a shade higher than last year, chiefly, I think, owing to the rise in the death-rate from zymotic diseases which also accounts for the slight rise in infantile mortality. Diarrhœal diseases really lie at the root of the whole matter, the climatic conditions of 1913 having been more favourable than usual to their propagation.

The death-rate from "fever," which is a fairly reliable index of the hygienic stability of a community, shows a slight decline and the rate from pulmonary tuberculosis has materially diminished. The death-rate from malignant disease shows an upward tendency and this has been manifest for a number of years.

In view of the public awakening to the disastrous prevalence of venereal diseases, I have thought it fit to make a few comments on this matter. In a short time some definite pronouncements may be expected from the Royal Commission now sitting to investigate this highly important question. In the meantime I am considering the practicability of providing means (by way of biological examination of suspected material) for assisting in the earlier and more positive diagnosis of these conditions and I hope to place certain aspects of this question before your Committee at an early date.

Whilst sanitary progress has been satisfactory on the whole and in certain cases exceptionally commendable there are indications that here and there the application of the spur might be productive of good. In these cases I propose to communicate with the Sanitary Authorities concerned and obtain full information of the circumstances after which, if need be, I will ask your Committee to adjudicate on the several matters in question and take action to ensure the necessary standard being attained.

My sincere thanks are due to your Committee for the hearty encouragement you have given to me in carrying out my duties. I am also most grateful to all the officials of Local Authorities for cordially granted assistance and last, but not least, to my loyal and hard-working staff for assisting me ungrudgingly, no matter the day or hour when they have been called upon.

I am,

Mr. Chairman and Gentlemen,

Your obedient servant,

MEREDITH YOUNG.

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REPORT OF THE Medical Officer of Health

For the Year ended December 31st, 1913.

Section I.—Area and Population.

Area.

In the Census Report of 1901 this is given as 645,918 acres and in the Census Report of 1911 as 644,172. The diminution is due to the extension of the Stockport County Borough boundaries in 1901. Excluding Wallasey, which is now a County Borough, the area of the County is 640,823 acres.

This area is distributed as follows :—

6 Municipal Boroughs	...	...	15,588 acres.
35 other Urban Districts	...	...	80,732 „
12 Rural Districts	...	...	544,503 „
Total	...	...	<u>640,823 „</u>

POPULATION—CENSUS, 1911.

Population.

At the Census of 1901 this was 599,070, but the extension of the County Borough of Stockport in Nov., 1901, reduced this population to 593,865. At the Census of 1911 the population of the Administrative County was 597,771 (excluding Wallasey).

At Midsummer, 1913, the population was estimated to be 613,310, distributed as follows:—

6 Municipal Boroughs ...	...	172,281 persons.
35 other Urban Districts ...	...	253,662 „
12 Rural Districts ...	...	187,367 „
Total ...	...	<u>613,310</u> „

Census, 1911.

The Report of the 1911 Census, shows the following figures for the Administrative County (excluding Wallasey):—

Area in Statute Acres (Land and Inland Water)	640,823
Families or Separate Occupiers ...	133,626
Persons ...	597,771
Males ...	286,380
Females ...	311,391

The figures for the various Districts are as under:—

Municipal Boroughs. (6)	Population.		Increase or Decrease of Population in Intercensal Period.		Families or Separate Occupiers. 1911.
	1901.	1911.	Increase.	Decrease.	
Congleton ...	10707	11310	603	—	2665
Crewe ...	42074	44970	2896	—	9955
Dukinfield ...	18929	19426	497	—	4626
Hyde ...	32766	33444	678	—	8019
Macclesfield ...	34624	34804	180	—	8436
Stalybridge ...	27673	26514	—	1159	6399

Urban Districts. (35)	Population.		Increase or Decrease of Population in Intercensal Period.		Families or Separate Occupiers,
	1901.	1911.	Increase.	Decrease.	1911.
Alderley Edge ...	2891	3143	252	—	701
Alsager ...	2597	2743	146	—	640
Altrincham ...	16831	17816	985	—	4107
Ashton-upon-Mersey ...	5563	7236	1673	—	1746
Bollington ...	5245	5225	—	20	1212
Bowdon ...	2788	3044	256	—	665
Bredbury and Romiley	7185	8684	1499	—	2115
Bromborough ...	1891	1974	83	—	403
Buglawton ...	1452	1439	—	13	337
Cheadle and Gatley ...	7916	9914	1998	—	2199
Compstall ...	875	908	33	—	223
Ellesmere Port and Whitby ...	4275	10366	6091	—	1963
Hale ...	4562	8351	3789	—	1945
Handforth ...	911	935	24	—	211
Hazel Grove & Bramhall	7934	9634	1700	—	2268
Higher Bebington ...	1540	1689	149	—	353
Hollingworth ...	2447	2581	134	—	634
Hoole ...	5341	5929	588	—	1224
Hoylake & West Kirby	10911	14029	3118	—	2890
Knutsford ...	5172	5760	588	—	1135
Lower Bebington ...	8398	11412	3014	—	2300
Lymm ...	4707	4989	282	—	1177
Marple ...	5595	6484	889	—	1590
Middlewich ...	4669	4910	241	—	1094
Mottram in Longdendale	3128	3049	—	79	756
Nantwich ...	7722	7815	94	—	1691
Neston and Parkgate ...	4154	4596	442	—	935
Northwich ...	17611	18151	540	—	3831
Runcorn ...	16491	17354	863	—	3767
Sale ...	12088	15046	2958	—	3563
Sandbach ...	5558	5723	165	—	1340
Tarporley ...	2644	2604	—	40	598
Wilmslow ...	7361	8153	792	—	1947
Winsford ...	10382	10772	390	—	2372
Yeardsley-cum-Whaley	1487	1659	172	—	390

CENSUS, 1911.

Rural Districts. (12)	Population.		Increase or Decrease of Population in Intercensal Period.		Families or Separate Occupiers,* 1911.
	1901.	1911.	Increase.	Decrease.	
Bucklow	19890	22870	2980	—	4959
Chester	10908	12448	1540	—	2381
Congleton	12220	12821	605	—	2755
Disley	2827	2958	131	—	716
Macclesfield	15740	16628	889	—	3659
Malpas	4488	4643	155	—	1030
Nantwich	23197	24992	1795	—	5458
Northwich	22073	23270	1198	—	4983
Runcorn	23244	28216	4972	—	6211
Tarvin	12614	13187	573	—	2867
Tintwistle	2105	2193	88	—	551
Wirral	13905	19024	5119	—	3836

The largest intercensal increases of population are given in order—Ellesmere Port and Whitby, 6,091; Wirral Rural, 5,119; Runcorn Rural, 4,972; Hale Urban, 3,789; Hoylake and West Kirby, 3,118; Lower Bebington, 3,014; Bucklow Rural, 2,980; and Sale Urban, 2,958. The important part played by the Wirral Peninsula in the increase in population will readily be seen. The only serious decrease is in the Borough of Stalybridge, where the population at the Census of 1911 was 1,159 less than in 1901. The other decreases were Mottram (79), Tarporley (40), Bollington (20) and Buglawton (13). The total population of the Administrative County, inclusive of the three County Boroughs (Birkenhead, Chester and Stockport) at the Census of 1911 was 954,919, showing an increase of 14.2 per cent. in the intercensal period. This figure places Cheshire thirteenth in the list of Counties from the population point of view.

Density of Population.

This is shewn in the first Table of Statistics given at the end of this Volume. In the six Municipal Boroughs it averages 11.05 persons per acre, in the 35 other Urban Districts 3.14 persons per acre and in the 12 Rural Districts 0.34 persons per acre. Taking the Administrative County as a whole it averages 0.95 persons per acre. The variation is of course considerable in different parts of the County. In Altrincham Urban District

CENSUS, 1911—NATURAL AND SOCIAL CONDITIONS.

it is highest, namely, 27.2 persons per acre and this figure is followed by Crewe Municipal Borough (20.92), and Hoole Urban District (17.85). The lowest figures for density of population are found in Tintwistle Rural District (0.16), Macclesfield Rural District (0.21), Malpas Rural District (0.21), Tarvin Rural District (0.23) and Nantwich Rural District (0.25), whilst several of the other Rural Districts shew figures only very slightly higher.

Tenements.

The proportion of tenements with less than five rooms, which averaged 41.0 per cent. of total tenements in the entire Administrative County at the Census of 1901, shewed considerable variations in the larger Urban Districts. The proportion then ranged from 15.0 per cent. in Crewe, and 19.7 per cent. in Wallasey, to 68.6 per cent. in Stalybridge and 71.6 per cent. in Hyde.

Section II.—Natural and Social Conditions of the Administrative County.

Many of the District Medical Officers of Health have given a short account of the natural and social conditions of their areas and I have pleasure in appending extracts from their Annual Report on these points.

According to Mr. Horace B. Woodward, F.R.S., F.G.S. (Stamford's Geological Atlas of Great Britain and Ireland), the greater part of Cheshire is a plain formed of new red rocks and covered with much boulder-clay and shelly drift gravel.

"In the western part of the county, as in the Wirral promontory, the Bunter sandstone and pebble-beds are overlain here and there by the Keuper sandstones. The latter are quarried for building-stone and noted for footprints of Labyrinthodonts at Storeton, about three miles south of Birkenhead. Keuper sandstones resting on the Bunter, constitute the chief water-bearing strata. Together they form the Peckforton Hills with Beeston Castle Hill and also the seraps of Alderley Edge, where galena, copper-ore and cobalt-ore have been found. The eastern part of the county is formed chiefly of the red Keuper marls with rock-salt and brine springs at Northwich, Winsford, Middlewich, Sandbach, Church Lawton and Nantwich. The salt

NATURAL AND SOCIAL CONDITIONS.

has been mined, but most of it is obtained by the pumping of brine. At Northwich especially the mining and pumping have led to disastrous subsidences of the land ; and some of the meres in the county are probably due to this cause. Rhætic beds and Lower Lias, much concealed by drift, occur near Audlem. Coal-measures appear in the east, at Macclesfield and Stockport, in a productive coal-field which forms a prolongation of that of South Lancashire. Traces of coal-measures also occur along the borders of the Dee Valley near Great Neston. East of Macclesfield and at Congleton Lower Carboniferous rocks form high moorlands with patches of shelly drift at heights up to 1,250 feet. There are lime-works at Astbury, in the Carboniferous limestone on the borders of Congleton Edge. Carrington Moss in the valley of the Mersey has been found useful and profitable as a receptacle for the solid organic refuse of Manchester. There are tracts of blown sand at New Brighton, Hoylake and West Kirby. The coast at Leasowe Castle has suffered much from marine erosion."

CREWE MUNICIPAL BOROUGH.—"The borough is situated in the S.E. part of Cheshire upon the Valley Brook, a tributary of the River Weaver. The mean altitude is about 170 feet above sea level and varies from 113 feet at the lowest part of the sewage farm to 200 feet at Hightown. The borough has a total area of 2,185 acres, comprising the Civil Parish of Monks Coppenhall and parts of the Civil Parishes of Church Coppenhall, Shavington-cum-Gresty and Wistaston, the three last named parts being added on 24th March, 1894, by Order of the Local Government Board.

"I am indebted to Mr. G. H. Atkinson, Clerk to the Poor Law Guardians, for the following information :—

					Half-year ending Lady Day 1913.	Half-year ending Michaelmas 1913.
In Workhouse—						
Able-bodied	...	...	...	...	137	125
Not able-bodied	...	...	...	...	317	303
Insane	...	...	...	...	16	15
Children	...	...	...	...	122	112
Total					592	555
Vagrants relieved in Workhouse					1805	1870
Out-door Poor relieved in Borough of						
Crewe	...	...	...	...	675	490
Ditto Vagrants	...	...	...	...	47	39
Cost of out-door relief in Borough of						
Crewe	...	...	...	...	£1192 3s. 6d.	£1102 16s. 7d.

NATURAL AND SOCIAL CONDITIONS.

"Last year the reduction in the number of out-door poor relieved was commented upon, and its continuance is an indication of general well-being and prosperity."

DUKINFIELD MUNICIPAL BOROUGH.—"Dukinfield is situated on the left bank of the River Tame, a tributary of the Mersey. The north and west parts of the town are near the river, the east, the most elevated part of the district, being some considerable distance from it. The river is 279 feet above sea level, but at Hough Hill the height is about 700 feet. The centre of the town is fairly well populated, but other districts and more particularly the east, consist of farm land and open spaces, so that Dukinfield, although to a large extent a manufacturing town, is in part rural and finds employment for some milk farmers. The sub-soil is in some places a loamy clay and in others sandstone and the outcrop of the Permian system. Underneath there are the coal-measures. Although at the present moment no coal pits are working, for many years coal mining was a very important industry in the district.

"The chief occupations of the inhabitants are—cotton manufacture (both spinning and weaving), engineering, boiler making, electric accumulator works, soap works, dye works, rope manufacture, carriage and wagon works and one brewery. None of these industries are specially injurious to the health of the workers, who, as a rule, are a fairly healthy class of men and women. The rateable value of the town is £77,592 and the amount of Poor Law out-relief for the year was £529 7s. 4d. The District Infirmary, situated in the Borough of Ashton-under-Lyne, is well supported both by public and private charity and many of the poor avail themselves of the benefits to be obtained from this excellent institution. The local Sick Nursing Institution is also supported by private charity and the nurses' services are highly appreciated by the sick poor of the town. Two nurses are now employed in this deserving work."

HYDE MUNICIPAL BOROUGH.—"The chief industries are cotton spinning and manufacturing, boilermaking, calico-printing, hat manufacturing, margarine making, indiarubber works, leather dressing, engineering and printing."

STALYBRIDGE MUNICIPAL BOROUGH.—"The chief industry of the town is cotton spinning and manufacturing, though numerous other industries are successfully carried on, such as iron and brass works, calico printing and bleach works, woollen mills and other minor industries, but under conditions not specially injurious to

NATURAL AND SOCIAL CONDITIONS.

health. Several old factories and workshops which had been closed for some years have recently been re-opened and adapted for cotton, iron, or other industries and the trade of the town is in a flourishing condition. The borough offers numerous advantages of a high commercial value, a river and a canal running through the town, an unequalled water supply and most excellent railway facilities, which give ready and direct access to all parts of the Kingdom and it seems to me that it only requires capital and enterprise to make Stalybridge one of the most progressive and prosperous hives of industry in the country.

“The people are on the whole well housed, though, as may be expected in an old town such as Stalybridge, there are many properties which must receive attention under the Housing, Town Planning, &c., Act, 1909. Commodious houses for the working classes are still in great demand, but during the past few years the building of cottages for the working classes has been practically at a standstill and private enterprise is doing nothing to meet the demand. It is most imperative that this matter should be boldly faced and that steps should be taken to replace many properties which are dilapidated and scarcely fit for human habitation. During the year several dwellings have been condemned and many others have been reported for repairs and sanitary improvements; but the great hindrance to progress in this direction is the difficulty of finding suitable accommodation for the people who are displaced from their dwellings.”

ASHTON-UPON-MERSEY URBAN DISTRICT.—“The population of Ashton-upon-Mersey is mixed—chiefly agricultural. Some work in Manchester and its surroundings and reside in the country. The poor relief is small.”

HIGHER BEBINGTON URBAN DISTRICT.—“Higher Bebington is situated two miles south of the Borough of Birkenhead. It is divided into an upper and lower ward, the former corresponding to the part of the district on the hillside and the latter to the part at the base of the hill. The geological formation of this hill on which the greater part of the Urban District is built is Lower Keuper sandstone belonging to the triassic rocks. The characteristic rock in the Wirral Peninsula is new red sandstone of the Bunter Group and occurs at a deeper level than the white freestone of Storeton Hill.

“Agriculture is the staple industry and stone quarrying is an important source of employment. Working in this stone does not

NATURAL AND SOCIAL CONDITIONS.

seem to be associated with respiratory trouble or other form of disease. Women in a number of instances find occupation in laundry work for households in the neighbouring Borough of Birkenhead. A small area of land is available for allotments and is utilised for this purpose.

“At the end of the year eight persons were on the list of outdoor poor, viz., seven adults and one child. £1 was the amount of weekly relief distributed among these persons. There were 13 admissions from Higher Bebington into the Workhouse and Infirmary during 1913, as contrasted with 10 in 1911 and 12 in 1912. No information can be obtained regarding the number of persons in receipt of old age pensions, but at the 1911 Census there were 46 persons over 70 years of age, viz., 12 males and 34 females.”

LOWER BEBINGTON URBAN DISTRICT.—“The district is constituted by three townships, viz.:—Lower Bebington, New Ferry and Port Sunlight. In the two latter the soil is clay, whilst in the former a thin layer of marl and clay are superimposed on the new red sandstone. Port Sunlight is laid out as a model village with wide roads and open spaces between the houses and both Lower Bebington and New Ferry possess public parks of wide extent. The town has, therefore, plenty of those ‘lungs’ which are so essential for the well-being of an urban community. The population at the Census of 1911 was 11,412 and is estimated to have been 12,120 at the mid-year in 1913.

“To a certain extent the district is residential for business men who pursue their avocations in Liverpool. A large section of the population finds employment in the Soapworks of Messrs. Lever. On the 13th January, 1914, 33 adults and 17 children were on the list of outdoor poor and resident in your district, viz.:—

		Adults.		Children.
Bebington	...	5	...	3
New Ferry	...	27	...	12
Port Sunlight	...	1	...	2
		—		—
		33		17
		—		—

“The amount distributed in relief weekly to these persons was £6. In 1912 the numbers were 73 adults and children and in 1911 there were 69 names on the corresponding list. The admissions to the Workhouse and Infirmary in the same years

NATURAL AND SOCIAL CONDITIONS.

were 85, 116 and 112 respectively. Information with regard to the number of individuals in receipt of old age pensions is not obtainable, but at the 1911 Census there were 216 persons over 70 years of age, viz. :—82 males and 134 females.

BOLLINGTON URBAN DISTRICT.—“The Urban District of Bollington is situated in a valley and its adjacent hill sides on the westerly edge of the East Cheshire Range of Hills. The valley forms a natural cul-de-sac a little off the Manchester to Macclesfield Main Road. The district is a bracing and healthy one and has excellent sites for residential property on its hill sides.

“The Great Central Railway has a line running through it and up to November of last year the neighbourhood had been almost entirely dependent on this system for travelling facilities. There is no doubt that such facilities have been of the most meagre description. Whilst many attempts have been made by the Council to persuade the railway people to improve the service, it was only after almost herculean efforts that an extra late train running from Manchester on one night a week with a corresponding one to Manchester were put on. Such a very inadequate service has militated very much against the growth of the neighbourhood as a place of residence for Manchester business men.

“Towards the end of the year a motor ’bus service between Macclesfield and Bollington was commenced. From the increased frequency in running of these vehicles since its inception, the service has evidently been a public convenience. Bollington has always been known for the fineness of its counts in cotton spinning. There are three mills engaged in fine cotton spinning and doubling, one in cotton weaving and another in calico printing. A well-known paper staining firm has its works in the village. At the commencement of the year there were a fair number of hands employed in fustian cutting by people who had recently started the industry in the Beehive Mill. This mill has been disused for some considerable time. However, towards the end of the year this business, with its usual unsettledness, declined, and at the present time the number of hands employed is quite small. At the Ingersley Vale, just beyond the village, is a calico bleaching works which finds employment for others. Outdoor employment is found in the neighbouring quarries situated in Bollington and Rainow, whilst at Pott Shrigley, in another direction, are the fire clay works and coal pits of Messrs. Hammond, Limited. These different occupations which are followed by the inhabitants would

NATURAL AND SOCIAL CONDITIONS.

appear to be of a healthy character. Mill life in a country district such as this is devoid of a great many of the more harmful influences associated with the same life in the larger cities and towns.

"The amount of Poor Law relief distributed in the district is not high, being £252 12s. 6d. for the last year. Hospital and gratuitous medical relief are well provided for at the General Infirmary, Macclesfield and advantage of this is taken chiefly by cases requiring operations or other institutional treatment."

BREDBURY AND ROMILEY URBAN DISTRICT.—"The district is for the most part hilly farm land, roughly divided into halves by one of the Pennine Range of Hills; Romiley and about a third of Bredbury, being on the south side and the other two-thirds of Bredbury on the north. The Peak Forest Canal runs through the district from Marple to Hyde and the River Goyt winds round the border of parts of Romiley and of Bredbury. There are several mills in both parts of the district, including hatworks, several engineering works, a colliery, two brickfields and cotton mills; two more of the latter have been opened during 1913. There is also a large incandescent mantle works, employing a large number of girls. Employment has been steady at all these during the year. The population is a well-to-do industrial one, with a number of small farmers and shopkeepers. Many residents are engaged in business in Manchester, Stockport and Hyde and the number of these increases year by year, new house property being built for them as required."

BROMBOROUGH URBAN DISTRICT.—"Bromborough is situated on the western bank of the River Mersey and on the main road from Chester to Birkenhead. The soil is loam over new red sandstone. The district is a residential one for Liverpool business men, but on the branch of the Mersey called Bromborough Pool an industrial population has been established in connection with Price's Candle Works. These works find employment for over 650 men and boys and 60 women and girls. A portion of the factories of Messrs. Lever is in the district; the persons, numbering 1685, employed there, reside in Port Sunlight. The Mersey chemical works are situated in the district and employ over 25 men. Land has been recently acquired for the establishment of other industries and two new works have been erected. There are rumours that a large number of houses for the industrial population employed in these various factories are to be built in the near future.

NATURAL AND SOCIAL CONDITIONS.

"Eight persons were on the list of outdoor poor in December, 1913; three of these were adults and five children. The amount distributed to them weekly was 15s. The number of admissions of persons from Bromborough to the Workhouse and Infirmary was seven in 1913, seven in 1912 and eight in 1911. It has not been found possible to obtain information of the number of persons receiving old age pensions, but at the 1911 Census there were 43 persons over 70 years of age, viz. :—21 males and 22 females. Many of the cottagers take advantage of the gratuitous medical relief afforded by Liverpool hospitals."

CHEADLE AND GATLEY URBAN DISTRICT.—"The district is mainly residential and agricultural; the sub-soil is clay and gravel. There are two bleachworks and dyeworks, one small engineering works and two steam laundries. The buildings connected with these works are well constructed and the health of the operatives is good. There are three brickyards in Cheadle Hulme and one in Gatley. In Cheadle Hulme handloom silk weaving is still carried on in the cottages, but the industry is rapidly dying out. There are three public institutions in the district, viz. :—the Manchester Royal Lunatic Hospital, the Barnes Convalescent Hospital (a branch of the Manchester Royal Infirmary) and the Warehousemen and Clerks Orphan Schools. These are treated as separate localities in this report.

"The number of new houses built and occupied during the year was much larger than in 1912. The majority of them were small villas in the Cheadle Hulme Wards."

COMPSTALL URBAN DISTRICT.—"The district is chiefly rural in character and lies on the south and south-easterly portion of the Werneth Hills, in the north-west portion of the County of Cheshire, being separated from the Glossop Rural District, in the County of Derby, by the River Etherow. The sub-soil is composed of clay, with intervening faults of sand, the whole resting on a rocky basis. The chief occupations of the inhabitants in the urban portion are weaving and spinning. The inhabitants of the rural portion are chiefly farmers and labourers.

"A fair amount of outdoor Poor Law relief is given to the old inhabitants, and four cases were admitted to the Hospital at Stepping Hill, under the Stockport Guardians. The social conditions of the inhabitants are good and healthy. The mills have been working full time all the year, and the workers have got good wages."

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ELLESMERE PORT AND WHITBY URBAN DISTRICT.—“The Urban District of Ellesmere Port and Whitby lies on the southern shore of the Mersey, at the junction of the Manchester Ship and the Shropshire Union Canals. The town is mainly industrial, built on the flat sandy shore of the Mersey and owing its existence to facilities for water carriage to manufacturing centres such as Wolverhampton, Birmingham, Manchester and the Midlands. Iron ore is brought from the north and forwarded to iron manufactories in Staffordshire. Large iron works for the making of galvanised iron constitute a staple industry of Ellesmere Port. These works employ over 3,000 men. Three large flour mills have been built, the owners having recognised the advantages offered by the position of your district for distributing their products. Still more recently an indigo dye works has been erected. A large Portland cement works has also been established and employs a number of men. One of the largest sources of employment is in the service of the Shropshire Union Railways and Canal Company. Agricultural pursuits are followed by the inhabitants of the portions of the Wirral and Chester Rural Areas which were included in your district in 1910.

“Fifteen adults and 23 children are on the last published list of outdoor poor as in receipt of relief, to the amount of £3 16s. 6d. per week. The admissions to the Workhouse and Infirmary numbered 77 in 1913, 110 in 1912 and 90 in 1911. Information in relation to the number of persons receiving old age pensions has not been forthcoming from the department concerned, but at the 1911 Census there were 103 persons over 70 years of age, viz, 45 males and 58 females. The Liverpool and Chester Hospitals are largely used by the workers, but the difficulty of reaching these places is very considerable so that a Cottage Hospital would be of very marked service to the district.”

HANDFORTH URBAN DISTRICT.—“This district lies upon a subsoil of sand and clay. It is situated between the Urban District Council of Cheadle and Gatley on the north and the Urban District of Wilmslow on the south. The chief occupations are at the bleach works and farm work. Very little Poor Law relief is given.”

HAZEL GROVE AND BRAMHALL URBAN DISTRICT.—“The parish of Hazel Grove and Bramhall was only formed on the 29th Sept, 1900, and comprises the five townships of Bramhall, Bosden, Norbury, Torkington and Offerton, sub-divided into the two drainage areas of Bramhall and Hazel Grove. It is very

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interesting to notice that each area maintains its original character, Bramhall being still a Rural District steadily developing as a suburban district to Manchester; whilst Hazel Grove is more of a working-class character, supplemented by a considerable number of Manchester warehousemen who live there.

“There are only three or four manufactories connected with the district—The Hollins Mill Co., the box-making department of the Sewing Cotton Company, Ltd. and the Diesel Engine Works adjoining.

“In the case of Bramhall, the spelling of the name has been completely altered and does not convey so much meaning as the original. In Domesday Book it was Bramale, which almost speaks for itself as being Bram-vale, or to put it more fully the Bramble vale or valley and even to-day this is most appropriate; the district is noted for its plentiful supply of blackberries. This contribution to its character as a Rural District has been a valuable asset, together with its naturally healthy and dry atmosphere, on rising ground at the foot of the Pennine Chain, in making it a fast-developing district for the many Manchester men who desire to get out in the country for their dwellings.

“The Hazel Grove drainage area, which consists of the townships of Bosden, Norbury, Torkington, Offerton and the East Ward of Bramhall, only obtained its legal name in 1887, when this drainage area was formed; previously it was a district without defined boundaries. Originally it was known as Bullock Smithy, from the fact that the man who founded it was Richard Bullock, who built a smithy in Torkington on land which he leased from John Torkington, of Torkington, on the 1st May, 1560. From this date the district gradually grew and the roads were made to the smithy as a centre, though it is difficult to realise that this applies to the main road, which originally stopped at Stepping Hill, where it branched into the old Roman road from Staley to Buxton. The name Hazel Grove was given to Bullock Smithy in 1835 and was suggested by the name of a gravel pit, ‘Hessel Grave.’ This Hessel Grave was in ‘Ho Lane’ and was one mile four furlongs from the present Council Offices, the mile-stone from which we measure having been in the fence almost opposite. The word is Saxon and means Hæssel—a stone and grave, a digging place—and it was one of the places from which the sand and gravel was obtained for the making of the road between Lyme Hall and Bramall Hall; though the author of the change in the name made the people think it referred to hazel nuts, of which there are plenty in the district.

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"The district is in a very healthy situation, on rising ground, beginning at about 300ft. above sea level. The population is 7,515 and the death-rate for 1913 was 11.9. The L. & N. W. Ry. provides easy facilities for Manchester people coming out to live and the tram service to Stockport every few minutes gives a good connection there. The population of the district is notable as being of fairly good circumstances and there are practically no abject poor, so that there is not so much need for hospital accommodation as in a crowded district; the work of a public nurse in connection with a Sick Nursing Association doing admirable service and is the means of instructing those whom she comes in contact with in the advantages of a hygienic method of living."

HOLLINGWORTH URBAN DISTRICT.—"Hollingworth, situated on the eastern border of Cheshire, consists of a township occupying a position at the base of a very hilly county district. The latter extends over the northern slope of the Longdendale Valley and to the south faces North-Derbyshire—the summit of the Peak being visible. Towards the north-east are situated the moors of South Yorkshire and a few miles to the westward, the Lancashire border is met. The Valley of Longdendale, wending its way between lofty hills, covers an extensive area and through it passes the main road between Manchester and Sheffield. The main street of Hollingworth is also part of this main road. Situated on the Manchester side of the township is Mottram and on the Sheffield side Tintwistle. The mean altitude of the main street of Hollingworth is 500 feet above sea level and the district to the northern side rises to a maximum of 1,300 feet. The river Etherow winds through the valley and here forms the boundary between Cheshire and Derbyshire. The subsoil in the immediate neighbourhood is mostly clay leading to sandstone rock, but at a higher altitude than the main street the subsoil almost ceases and the soil is found to be directly deposited on rock. This leads to poor vegetation, which is also partly caused by the severe east winds which frequently drive through the valley. The climate of the district is very bracing.

"Cotton workers, engaged both in spinning and weaving, form the majority of the population and within the rateable area are three large cotton mills and one large bleaching works. Beyond these there is no other industry of any importance which would tend to affect the public health. Very few new houses have been built since 1911, in spite of the fact that there is a general demand for three-bedroomed houses.

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A good return awaits the enterprising investor who would build some houses larger than the ordinary cottage, with at least three bedrooms and a bathroom, for the property would find ready tenants."

HOOLE URBAN DISTRICT.—"The Hoole Urban District comprises an area of 334 acres and is almost entirely residential in character. The population consists for the most part of railway employees, nurserymen, clerks, artisans, shop-assistants, commercial travellers, and many persons who during the day are commercially or professionally engaged in Liverpool or Chester. There are no courts or slum areas; Hospital and other forms of gratuitous medical relief are only used to a limited extent. During the year out-door relief under the Poor Law was given to 11 men, 42 women and 42 children."

HOYLAKE AND WEST KIRBY URBAN DISTRICT.—"The district is situated on the estuary of the River Dee where it falls into the Irish Sea. A portion of West Kirby is built upon the slopes of Grange Hill, while the remainder, with Hoylake and Meols, lies along the flatter river bank and sea shore. Firm hard sand forms the soil and subsoil overlying clay in the level parts. New red sandstone constitutes Grange Hill.

"In the main the district is residential, with houses belonging to persons of leisure, or occupied in business in Liverpool. Hotel keeping and letting of furnished houses and apartments, as in other watering places, is the occupation of a number of the inhabitants. Building trades, the fishing industry, gardening, golfing and shop keeping give employment to others. There is no particular occupation which could be considered as having a detrimental influence on public health.

"On December 11th, 1913, 81 persons, 44 of whom were children under 16 years of age, were in receipt of out-door relief. The number of persons on the permanent list and the weekly amount given to them in relief for each of the years 1911-1913 were as follows:—

	1911.		1912		1913.
Numbers	... 81	...	72	...	81
Amount weekly	... £8 7 6	...	£8 5 0	...	£10 2 6

"The admissions to the Workhouse and Infirmary in the same years are shown below:—

1911		1912.		1913.
19	...	44	...	38

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"No information is obtainable in relation to the number of individuals in receipt of old age pensions, but it may be of interest to record that at the 1911 census there were 446 persons over 70 years of age, of whom 149 were males and 297 females. There were two women between 95 and 100 years of age. The Hoylake Cottage Hospital provided treatment for 131 patients in 1913, 133 in 1912 and 131 in 1911. Extensive use is made of Liverpool Hospitals by the poor."

LYMM URBAN DISTRICT.—"The Urban District of Lymm forms part of the northern boundary of the County of Chester and divides that County from Lancashire. It lies five miles eastwards from Warrington. The district consists of a central village with residential and agricultural surroundings. The central portion is surrounded by plain lands, low-lying on the north, west and east, but keeping a higher level in a southern direction. The lowest part of the district is around the sewage farm in Statham and the height is there 27 feet above sea level (high-water mark at Liverpool, ordnance datum), the highest point near Broom Edge is 190 feet above the same ordnance datum. The population is made up of a residential portion occupied at Manchester (13 miles away) and at Warrington, of shop-keepers, local artisans and operatives (fustian cutters), of artisans and operatives living in the district and working outside it (a few) and finally of an agricultural portion. Within the last nine years a new industry—salt manufacture—has been introduced, which at present occupies about a hundred males. This year a second salt works has been established and will soon be in full work."

MARPLE URBAN DISTRICT.—"The district is of a hilly nature, intersected by valleys and with the River Goyt winding through the outer borders. The village is chiefly built on a slope, with a west and north-west gradient. The height above sea level varies from 450 to 633 feet. It is well wooded and drained, except parts of Marple Dale, which are damp and humid, owing to insufficient fall and nearness to the river. The sub-soil is chiefly clay, with faults of sand and marl, although, owing to its natural drainage, it is fairly dry and healthy. The district is chiefly a residential one, consisting of fairly large property, tenanted and owned by people with businesses in the adjacent towns of Manchester, Stockport, &c. There are three mills and a few small works. The chief industry is cotton spinning and manufacturing. The cottages are, generally speaking, roomy and well ventilated, but there

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is still a demand for more cottage property and several are to be built this year, which will do away with some cases of overcrowding."

MIDDLEWICH URBAN DISTRICT.—"The chief occupations of the inhabitants are at the Chemical and Salt Works and the Milk Factory, also Agricultural labour. The occupations of the inhabitants are not prejudicial to their health. The amount of out-door Poor Law relief is about £8 weekly. The Guardians subscribe to all the required Hospitals and Sanatoria, which are well used."

MOTTRAM URBAN DISTRICT.—"The district roughly extends from Roe Cross to Best Hill Bridge north and south and from near the foot of Mottram Moor to the brook on Hyde Road east and west, with the village of Mottram, situated 600 feet above the sea level as its centre and from which the other portion of the district falls away. The sub-soil is chiefly composed of clay with underlying rock. The inhabitants of the district are chiefly engaged in the cotton industry. The chief occupations of the inhabitants are manufacturing: bleaching, calico printing and tape making. There is one large cotton mill in the district, situated in Broadbottom."

NANTWICH URBAN DISTRICT.—"Nantwich (or Namptwyche, anciently called Wyche Malbank) occupies a pleasant position on the banks of the River Weaver, which intersects the town and over which there is a substantial stone bridge of one arch. The Aqueduct of the Grand Junction Canal, passes over Welsh Row, near the town. The Ellesmere Canal joins the Grand Junction Canal a short distance from the town. Nantwich is the market town for a large and important agricultural area and is the home of fox hunting. The Brine Baths are visited by a large number of persons who suffer from rheumatism, gout, sciatica, neuritis, &c. The town may be roughly classified as being situated on the Keuper Marls, overlying the new red sandstone."

NESTON AND PARKGATE URBAN DISTRICT.—"The Urban District of Neston and Parkgate lies in the south-west portion of the Wirral Peninsula on the banks of the River Dee. It comprises three townships, Great Neston, Little Neston and Parkgate, situated at distances of about a mile from each other. The geological formation underlying the entire area is new red sandstone. The coal measures are reached at Little

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Neston and a pit has been worked there for many years. Here and there pockets of clay overlie the sandstone, but the soil and sub-soil are both usually of a sandy character.

"The occupations of the inhabitants may be roughly classified according to the townships as fishing at Parkgate, building trades and artisans in Great Neston and coal mining at Little Neston. Modern machinery was introduced into the Wirral Colliery Works in 1912 and resulted in a considerable revival in the welfare of the colliers. Employment was found in the Colliery industry for the following numbers of men in the years 1910 to 1914:—

1910.	1911.	1912.	1913.	1914.
200	200	60	150	200

"In all parts of the district many of the inhabitants are engaged in agricultural pursuits. A steam laundry has been established at Parkgate and employs a large number of hands, viz., 13 males and 55 females. As in other parts of Wirral a considerable section of the population is made up of Liverpool business men and there is an increasing tendency for the district to become residential in its character, but the bias in this direction is limited by an inconvenient railway service.

"The number of out-door poor in receipt of relief in the first week of December in each of the years 1911 to 1913 may be seen from the following table:—

	Adult Males.	Adult Females.	Children (both sexes).	Total. Amount of Relief.
1911	5	26	11	42—£5 7s. 0d.
1912	7	27	10	44—£7 5s. 0d.
1913	8	23	12	43—£6 10s. 6d.

"The admissions to the Workhouse and the Infirmary in the same years were 40, 56 and 46 respectively. It has been found impossible to obtain information concerning the number of persons in receipt of old-age pensions, but at the 1911 census there were 109 persons over 70 years of age, of whom 31 were males and 78 females. Extensive use is made by the poor of the Hospital Institutions of Liverpool and Chester, but considerable difficulty is often experienced in meeting the charges for treatment. So that there is urgent need for a Cottage Hospital, which would obviate the necessity for the journeying of patients to the neighbouring towns. The expenses of the Victoria Jubilee Nurse are paid by private

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subscription. The Nurse attends any class of case except Midwifery and Infectious Disease. An incalculable amount of benefit has accrued to the Neston poor through her energetic but tactful dealing with infant nursing, feeding and kindred subjects.

SYNOPSIS OF NURSE'S WORK.

	1909.	1910.	1911.	1912.	1913.
Patients	196	124	136	104	119
Visits	5,272	4,256	5,162	5,014	4,979

NORTHWICH URBAN DISTRICT.—“The town proper is very low lying and is intersected by the River Weaver and its tributary the Dane. A considerable portion of the town is not more than 50ft. above sea level. The principal industries are chemical and salt manufactures, with some shipbuilding and iron foundries. As a market town it serves some proportion of the surrounding agricultural area. Subsidence, caused by the pumping of brine, is a source of great sanitary inconvenience, as it cracks floors and pavements, alters the fall of channels and sewers and causes them to sag.”

SANDBACH URBAN DISTRICT.—“Sandbach is situated on a sandy soil chiefly, with a small proportion of clay. The industries of the town consist of engineering and chemical works, silk mills, fustian works and boot manufacturing. A large proportion of the district is agricultural.

“We are 26 miles from Manchester and most of the urgent cases for operative treatment are sent there, to such hospitals as the Royal Infirmary, St. Mary's, Children's Hospital and the Eye, Ear and Throat Hospitals. The poor in receipt of relief avail themselves of treatment at a large Infirmary at Acrelidge belonging to the Congleton Board of Guardians and all cases of infectious disease are sent to West Heath and small-pox cases to the Small-pox Hospital at Acrelidge.”

SOUTH-WEST CHESHIRE UNITED DISTRICT.—“The United District of South-west Cheshire consists of Tarporley Urban District, Chester Rural, Tarvin Rural and Malpas Rural Districts. This whole district is practically what is known as the Cheshire Vale. It is bounded on the north by the River Mersey and Manchester Ship Canal, on the south by the Wych Brook, on the west by the River Dee and its tributary the Pulford Brook, on the east by a range of hills—Kelsall Rise, the Peckforton Hills and Harthill; these hills are a continuation of the Overton, Helsby

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and Bireh Hills, which lie to their north and almost touch the River Mersey. The River Gowy runs nearly north and south of the district from Beeston to the Mersey. The district is purely agricultural, with good farm homesteads as a rule and here and there are the county seats of the owners of the land, and large residences of merchants from the neighbouring cities of Chester, Liverpool and Manchester. A great number of these are hunting people and provide a certain amount of labour for the working class and good markets for corn and hay for the farmer. The chief occupation is cattle-feeding, cheese-making and milk-selling to the great centres of Liverpool and Manchester and some of the milk is sent as far as London, a distance of 190 miles. The cheeses made in Cheshire have a world-wide repute and yearly some of the cheeses are sent to nearly every quarter of the globe. The district is well watered. The River Dee and the River Gowy, with their numerous brooks, which are never dry, add greatly to the quality of the pastures and the health of the cattle. The general conditions of the rural inhabitants is good, there is very little poverty and as a whole they are well housed and clean. The houses, with very few exceptions, are adequate and fit for habitation; there is a sufficiency of open spaces about the houses and the surroundings on the whole are satisfactory. The country cottages are mostly detached, with good gardens and many are of the black-and-white type, with thatched roofs and small lead lights, with no damp-proof course. These we are trying to bring into a more sanitary condition without destroying their picturesque appearances.

“The above social conditions tend to increase the healthiness and longevity of the inhabitants of this district and there is no employment in the district which causes any adverse conditions.

“In addition to the Poor Law Infirmaries patients may be sent to the Chester Royal Infirmary, which has been brought up-to-date at a great cost and the large special hospitals of Liverpool and Manchester: our phthisis cases can be admitted to the two large sanatoria—Delamere Forest, Manchester; and Kingswood, Liverpool; both of which are just outside the boundary of the South-west Cheshire District.”

WILMSLOW URBAN DISTRICT.—“This district is situated in the County of Chester, about 10 miles south of Manchester. The London and North Western Railway from Manchester to Crewe runs through it. It forms part of the Cheshire plain and is traversed by the valley of the River Bollin. Its area comprises

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4,969 acres. The subsoil is chiefly sand and clay. On Lindow Common and in its neighbourhood, there is peat. The district is partly suburban and partly rural in character. The population was 8,153 at the census of 1911, as against 7,361 in 1901, being an increase of 792, or 10.7 per cent. Between 1891 and 1901 the increase was 14.4 per cent. The population was estimated to be 8,300 in 1913. A considerable part of the population is residential, chiefly composed of persons engaged in business in Manchester and Stockport, with their families. There are no large manufacturing in the district. Some of the inhabitants work at a cotton mill at Styal and some at a bleach works at Handforth: places just outside the district. Many are employed in the ordinary local trades, whilst others are occupied with agriculture. As a rule there is not much unemployment. Persons in receipt of poor relief are mostly aged and past work. There is no hospital in the district. The inhabitants make use of the hospitals in Manchester and Stockport, to which the Council are subscribers."

BUCKLOW RURAL DISTRICT COUNCIL.—*Population, Social Conditions, &c.*—"The population has been estimated for 1913 from the known number of new houses erected. The district is rich in Public Institutions. They are (1) the Manchester Corporation's Sanatorium for Phthisis at Baguley, now being enlarged (1913 figures, 43 officers and 122 patients); (2) the South Manchester Guardians' Cottage Homes at Styal (52 officers, 510 children); (3) the David Lewis Epileptic Colony at Marthall (71 officers and 275 patients); (4) the Manchester Consumption Hospital in Dunham Massey (15 officers and 48 patients); and the Altrincham U.D. Infectious Diseases Hospital in Dunham Massey (10 officers and 8 patients); giving a total of 191 officers and 963 inmates. Other inhabitants are estimated at 22,455; there is therefore a gross population of 23,609 and nett 22,646. There is a large residential section of persons employed in, or connected with, Manchester; a large trading section; a large farming and agricultural section; a certain number of resident gentry; and a colony of workshop operatives at Broadheath.

"I am not aware that there is any influence of any particular occupation on public health. The point does not arise. I have no information about Poor Law relief, nor about hospital and other forms of gratuitous medical relief."

DISLEY RURAL DISTRICT:—"The elevation of the district varies from 340ft. (O.D.) at the river level to nearly 1,200ft. (O.D.) on the hill tops. The main road is 600ft. The subsoil is generally

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clay and overlies the gritstone. The inhabited houses number:—Disley, 693; Furness Vale, 126; total, 819. Six new houses were erected during the year. The chief occupations of the inhabitants are agricultural and textile. The amount of Poor Law relief paid during the year was £158 3s. 5d."

MACCLESFIELD RURAL DISTRICT.—"The Rural District of Macclesfield is situated in the east of the County of Chester and adjoins Derbyshire on the east and Staffordshire on the south-east and south. It consists of 79,495 acres and surrounds the Borough of Macclesfield and the Urban District of Bollington, its diameter being about 15 miles. It is largely drained by the Rivers Bollin and Dean which run through it in a northerly direction and by the Goyt and the Dane, which respectively form part of the eastern and the southern boundaries. The district is divided naturally into a hilly eastern portion and a lowland western portion, this district corresponding with a geological 'fault' running almost directly north and south through the district in a line indicated fairly accurately by the direction taken by the Great Central and the North Stafford Railways. East of this fracture, the physical features contrast very strongly with those on the western aspect. On the eastern side are lofty hills rising nearly 1,600 feet above the sea level and in many parts consisting of barren moorlands suitable only for grazing; while on the west the district is well wooded and capable of being highly cultivated. The London and North Western, the North Stafford and the Great Central Railways traverse the district, as also does the Macclesfield Canal.

"The great majority of the people are engaged in dairy farming. The larger portion of the milk produced is supplied to the neighbouring towns and to Manchester, while the remainder is manufactured into Cheshire cheese. The other principal industries are quarrying, coal mining and silk printing. Some of the male inhabitants find employment in adjacent districts as calico printers and cotton spinners, a few of the women being engaged in felt hat trimming and the making of blouses and shirts. It cannot be said that any of these occupations has a bad effect upon the health of those employed."

NANTWICH RURAL DISTRICT.—"The district is situated in the south-east of Cheshire and adjoins in the south the County of Salop and in the east the County of Stafford. It is part of the alluvial plain of Cheshire, its sub-soil being largely the red marl. It surrounds the Borough of Crewe and the Urban District of Nantwich, both of which districts are situated near

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its centre. The diameter of the district is about sixteen miles. The occupation of the vast majority of the residents is that of dairy-farming. The greater part of the milk produced is manufactured into Cheshire Cheese, but large quantities of milk are supplied to the neighbouring towns, to the large centres of population in Lancashire and to London. In that part of the district contiguous to the towns of Crewe and Nantwich there is a considerable population of a non-agricultural character, which population chiefly consists of railway employés and of trades-people and their employés, whose daily occupation is chiefly found in the towns of Crewe and Nantwich. The wives and daughters of the poorer members of this class are to some extent employed in the clothing factories of Crewe, Nantwich and Willaston and a small number are employed as out-workers in this class of business. Of the four sub-districts into which the district is divided, the Crewe sub-district contains practically all the non-agricultural population, though even here the preponderating element is agricultural, whilst the sub-districts of Nantwich, Bunbury and Wrenbury are practically exclusively agricultural in character. Agriculture in this district is in a prosperous condition and the wages of agricultural labourers compare favourably with those of other parts of England. The district is drained by the river Weaver, which is a tributary of the Mersey and which receives tributary streams from the Counties of Salop and Stafford. The London and North Western, the Great Western and the North Staffordshire Railways run through the district, as also does the Shropshire Union Canal. The water-main of the Liverpool Corporation runs through the district, as also does the London and North Western Rly. Co.'s main, which supplies the Borough of Crewe. These mains are largely made use of for the supply of water to the Rural District."

TINTWISTLE RURAL DISTRICT.—"This district is divided into three portions—Tintwistle, Hattersley and Matley.

"The Tintwistle portion extends from just below Saltersbrook to Millbrook Brow, Hollingworth east and west and from Manchester Reservoirs across the moors to Carbrook north and south. The Hattersley portion is surrounded by Mottram on the south-east, Borough of Hyde on the north-west and Matley on the north-east. Matley adjoins Stalybridge Borough on the north, Mottram and Hollingworth on the south and south-east and Hattersley on the west.

NATURAL AND SOCIAL CONDITIONS---BIRTHS.

"The sub-soil is chiefly composed of clay, with underlying rock. The chief occupations of the inhabitants are manufacturing cotton goods and bleaching."

WIRRAL RURAL DISTRICT.—"Wirral Rural District comprises the greater portion of the Peninsula of Wirral, lying between the Mersey and the Dee. The underlying geological formation throughout its entirety is new red sandstone and most of the soil and sub-soil overlying this is clayey or sandy loam. Generally speaking the inhabitants may be divided into two classes: (1) Those whose occupations are agricultural. (2) Those who are associated with business in Liverpool and other towns. The latter class has been steadily increasing during the last few years and some parts of the district have developed into residential centres, losing their rural character to a very large extent. Agriculturists here, as a class, may be described as prosperous, when compared with the same class in other parts of England; proximity to the markets of Liverpool, Birkenhead and Chester, facilitating disposal of the produce. Many members of the farming community devote themselves almost entirely to feeding dairy cattle and forwarding milk to the towns above mentioned. In the district there are 35 civil parishes and five of these have populations of over 1,000 persons, viz., Heswall, Little Sutton, Prenton, Eastham and Upton."

Section III.—Births and Deaths.

Births.

There were 13,206 births registered in the Administrative County during 1913, namely, 3,843 in the six Municipal Boroughs, 5,614 in the 35 other Urban Districts and 3,749 in the 12 Rural Districts.

The birth-rate per thousand living in the Administrative County was therefore, 21.53 for the year 1913. In the whole of England and Wales this rate was 23.9 per thousand living, in the Rural Districts of England and Wales 22.2, in the 96 great towns 25.1 and in the 145 smaller towns 23.9. In Cheshire the birth-rate varied from 22.3 in the six Municipal Boroughs to 22.13 in the 35 other Urban Districts and 20.0 in the 12 Rural Districts. Ellesmere Port and Whitby Urban District showed an exceptionally high rate of 40.6 and the rate

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varied in other parts of the County from 31.3 in Buglawton Urban District, 30.5 in Lower Bebington Urban District, and 26.3 in Runcorn Urban District, down to 9.4 in Bowdon Urban District, 13.1 in Alderley Edge Urban District, 14.0 in Marple Urban District and 14.5 in Bromborough Urban District.

The birth-rates were again lower in what may be termed the better-class residential districts than in the poorer-class districts and in the working parts of manufacturing towns. The following may be taken as examples:—

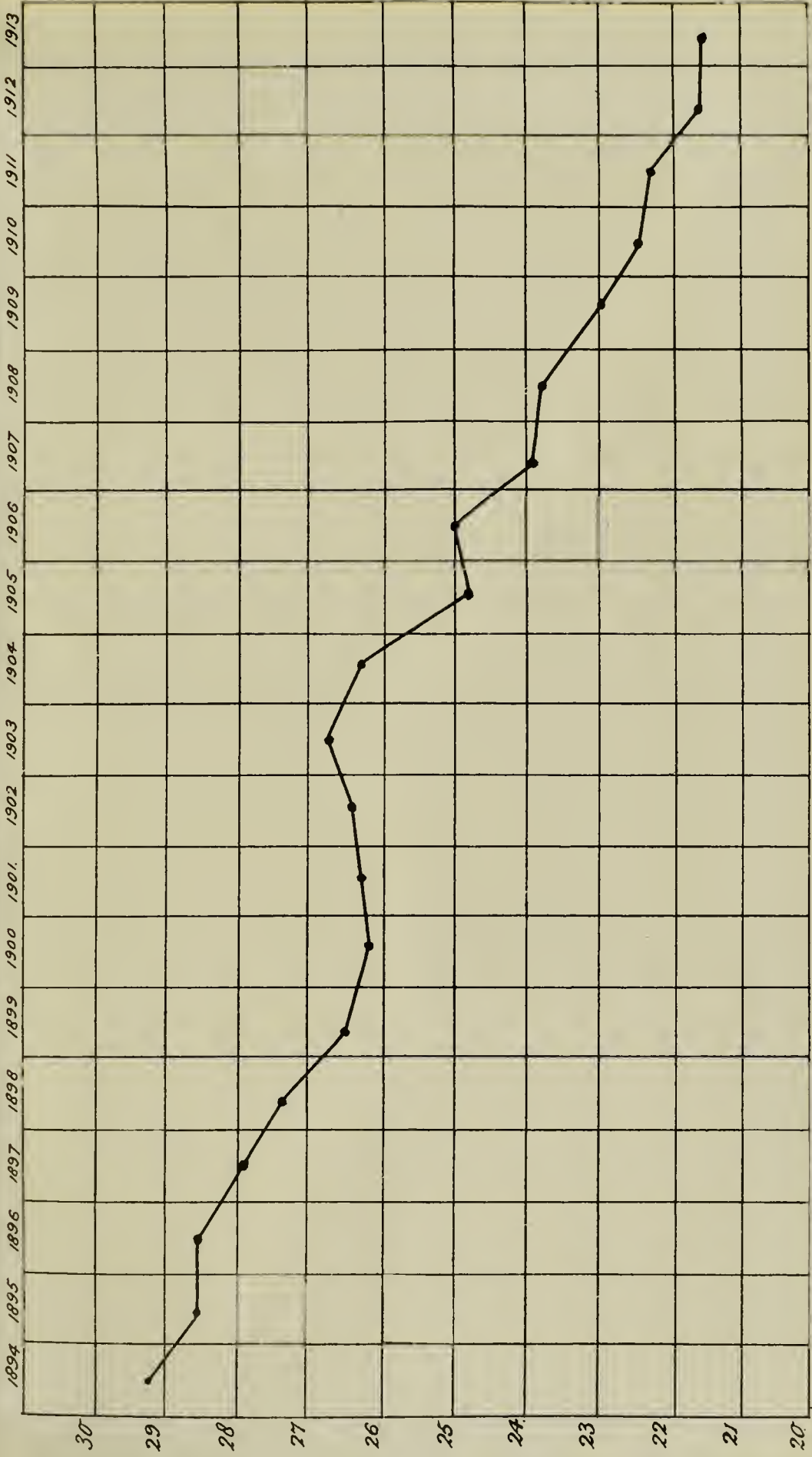
Better-class Districts.			Birth-rate.
Bowdon	...	...	9.4
Alderley Edge	...	...	13.1
Marple	...	...	14.0
Bromborough	...	...	14.5
Hale	...	...	15.2
Hoyle-cum-West Kirby	...	...	16.7
Working-class Districts.			
Ellesmere Port and Whitby U.D.	...	...	40.6
Buglawton U.D.	...	...	31.3
Lower Bebington U.D.	...	...	30.5
Handforth U.D.	...	...	28.8
Runcorn U.D.	...	...	26.3
Dukinfield M.B.	...	...	25.9

The almost continuous decline in the County birth-rate since the period when correct figures first became available is shewn on the accompanying diagram.

In England and Wales the decline is apparent from the following figures:—

			Birth-rate per 1000.
1881-1885	...	...	33.5
1886-1890	...	...	31.4
1891-1895	...	...	30.5
1896-1900	...	...	29.3
1901-1905	...	...	28.1
1906	...	...	27.1
1907	...	...	26.3
1908	...	...	26.5
1909	...	...	25.6
1910	...	...	24.8
1911	...	...	24.4
1912	...	...	23.8
1913	...	...	23.9

DIAGRAM SHEWING BIRTH RATE IN CHESHIRE SINCE DATE WHEN CORRECT RECORDS WERE FIRST AVAILABLE.



The Registrar-General in his Seventy-fourth Annual Report discusses this question as follows:—

“As already stated the birth-rate in England and Wales attained the highest point on record in the year 1876; and for the purpose of measuring the decrease that has since occurred, the mean annual rate in the quinquennial period 1876-80 has been taken as a standard. Calculated on the total population the fall in the birth-rate in the period under review amounted to 31 per cent.; the fall in the proportion of births to the number of women of child-bearing ages amounted to 36 per cent.; while the fertility of married women, *i.e.*, the ratio of legitimate births to wives of conceptive ages, showed a decrease of 34 per cent.

“Put in another way, if the fertility of married women in proportion to their numbers had been as high in 1911 as in 1876-80 the legitimate births would have numbered 1,273,698 instead of the 843,505 actually recorded, giving a legitimate birth-rate of 35.2, or 11.8 in excess of that shown in Table 6.

“But if the population in 1911 had not only shown the same fertility for wives aged 15-45, but had contained them in the same proportion as that of 1876-80, the resulting birth-rate would of course have been the same as in 1876-80, namely 33.67. Therefore the proportionate increase in wives aged 15-45 in the 1911 population is sufficient to account for a rise of 1.56 in the legitimate birth-rate.

“The fall in the legitimate birth-rate since 1876-80 is 10.34, therefore this net fall must be made up of a potential rise of 1.56 due to increased proportion of wives aged 15-45, and a fall of 11.90 due to diminished fertility of wives from whatever cause.

“The fall due to decrease of illegitimacy is 0.64, making up the fall of 10.98 in the total birth-rate. The fall in the illegitimate rate is compounded similarly to that in the legitimate rate of a potential rise due to (1) increased proportion of unmarried and widowed women aged 15 to 45 years, and a fall due to (2) their diminished fertility. Had the latter remained as in 1876-80, 67,706 births would have resulted, giving an illegitimate birth-rate of 1.87, or 0.84 more than that actually recorded. This figure then represents the effect of (2), so the difference between it and 0.64, the actual fall in illegitimate birth-rate, must represent the potential rise, 0.20, due to (1).

“It will be understood that when a potential rise is spoken of what is meant is that if the factor referred to had been the only one whose influence was altered the rise in question would have occurred.

“It will be seen that the effect of decrease in fertility of married women, due in some measure to their greater average age, but largely no doubt to deliberate restriction of child-bearing,—is masked to some extent by the net result of the other changes noted in the constitution of the population, so that these cannot be appealed to as helping to explain the fall in the birth-rate.”

In the year 1908 a Conference was held at Lambeth to consider this question of the decline in the national birth-rate and no fewer than 240 Bishops from all parts of the world attended. The resolutions passed at that Conference after most thoughtful consideration were as follows:—

“The Conference regards with alarm the growing practice of the artificial restriction of the family, and earnestly calls upon all Christian people to discountenance the use of all artificial means of restriction as demoralizing to character and hostile to national welfare.”

“The Conference affirms that deliberate tampering with nascent life is repugnant to Christian morality.”

“The Conference expresses most cordial appreciation of the services rendered by those medical men who have borne courageous testimony against the injurious practices spoken of and appeals with confidence to them and to their medical colleagues to co-operate in creating and maintaining a wholesome public opinion on behalf of the reverent use of the married state.”

Since that date I am assured that this subject has continued to receive the most careful consideration of a number of Bishops who are convinced that a strong, though circum-spect, appeal should be made to all Christian people to oppose, and utilise their best endeavours to remedy such social and economical difficulties as tend to a continued diminution of the birth-rate. This side of the question must of necessity appeal to a large section of the population. On the one side of the difficulty we must recognise and make due allowance for the existence of more or less exaggerated ideas on such matters as social position, standard of life, dress, education of children, present cost of living, provision for old age and the like—all or nearly all desirable and sometimes laudable

objects in themselves. But on the other side—and here is where it is hoped public health and sociological agencies may be able to make their influence felt—there are certain very serious conditions which materially influence the height of the birth-rate. First there is the housing difficulty and here it is quite a common thing to learn that marriageable people have had to postpone marriage because they could not secure even a small house in which to live. In quite a number of instances recently brought to my knowledge couples have had, after a certain period of waiting, to eventually take up lodgings with one or other of their parents.

Again conditions are frequently attached to employments which favour the election to remunerative posts of married people with no ‘encumbrances.’ The use of the word ‘encumbrances’ in such a connection is in truth deplorable for it means that people who hope to qualify for such posts must, as a necessary precedent, ensure that there is no likelihood of ‘encumbrances’ and, if they are to retain their position, must persist in the avoidance of likely ‘encumbrances.’ Surely if anyone at all can afford to make due allowance for happenings of this kind public bodies who are largely laws unto themselves can do so. The fact remains however that public bodies are amongst the greatest sinners in this respect.

Still again there is the eternal wage question which is undoubtedly a potent factor though statistics seem to show that it is one of little moment in the lower section of the wage-earning classes (amongst whom the birth-rate is usually high) but is of considerable import in the classes above the Income Tax limit and particularly in the so-called ‘middle-class’ section of society—more so, I believe, in the lower middle-classes than in the upper middle-classes.

A perusal of certain literature which I have been privileged to peruse inclines me to think that the Committee of Bishops to which I have alluded have formed an opinion similar to that which I myself hold on this particular point and I cannot do better than quote, with the most distinct and respectful approval, certain of their carefully weighed words. As is pointed out by their Lordships much is obviously left unsaid and much can only be dealt with in the individual case so that only an attempt can be made to give some outlines of guidance. The document from which I quote commences by drawing attention to the coincident decline in the birth-rate in England and Wales and the increase in the marriage-rate.

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Their Lordships then go on to say :—

“The obvious inference from these two facts seems to be that the average fruitfulness of marriages in Great Britain is greatly decreasing and this inference is borne out by a close study of the statistics.

“That this decrease is very largely due to the deliberate restriction of the procreation of children in married life is attested by its concurrence with the sale of drugs and instruments for this purpose and by communications which have been received from many different sources.

“This diminished birth-rate is the more serious because it is found most among the more educated and the robuster parts of the population and least among the physically unfit.

“In addition to the peril, thus disclosed, to the morality and welfare of our own country, very strong declarations are made by those best qualified to speak, to the effect that such restriction tends to many forms of damage to the moral, mental and bodily health of those who use it. This is confirmed by testimony from the Colonies and from foreign countries.

The Lords Bishops speak in the most unhesitating manner on the use of “drugs and appliances which profess to give security against any results from intercourse.” “We believe,” they say, “that (broadly speaking) such use is at once dangerous, demoralising and sinful.”

“(i.) It is condemned, we believe, as unnatural, by healthy instinct in men and women. A society in which it is practised will lose delicacy of feeling and the refinement which is not the exclusive property of any particular class, but comes of keeping the natural instincts of modesty and reserve untarnished.

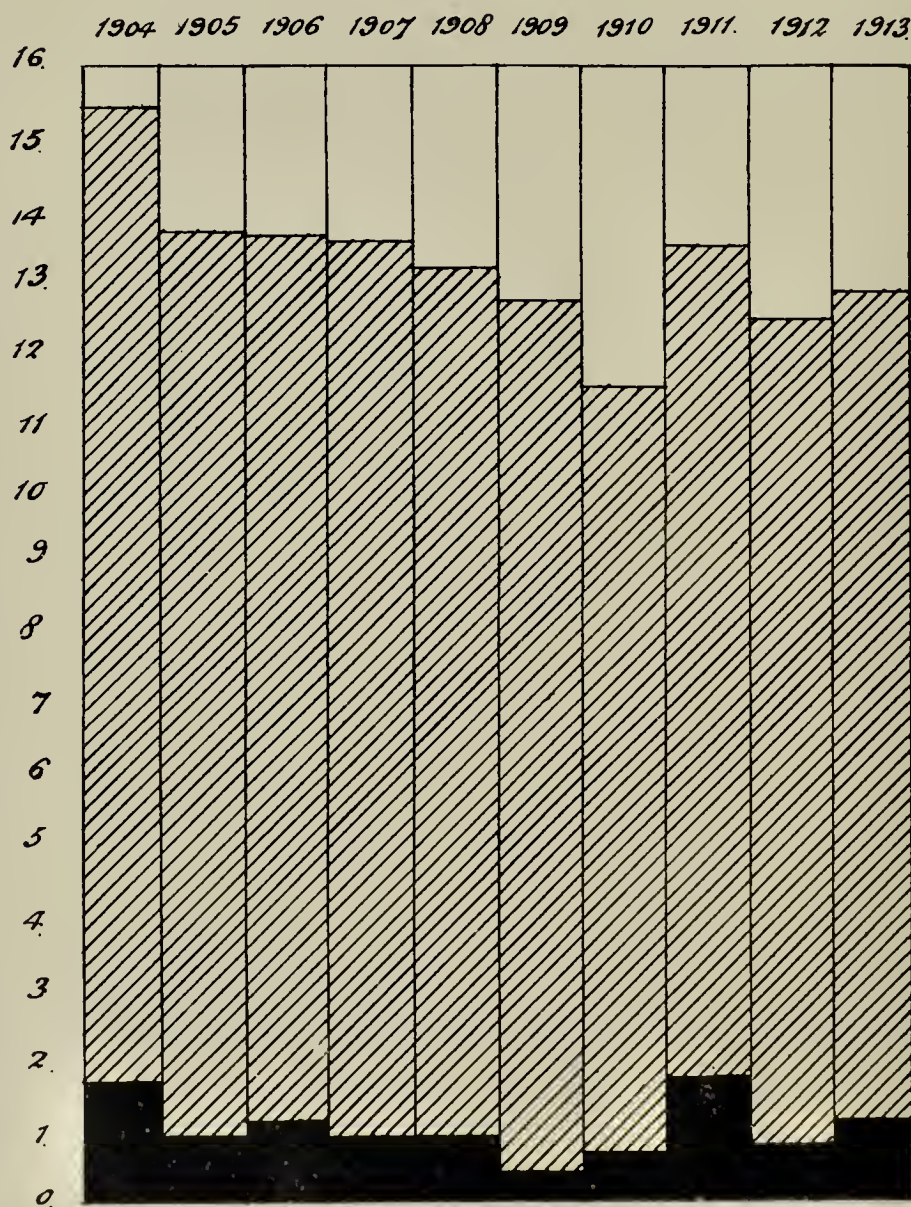
“(ii.) It errs against the first principles of true purity by isolating the physical side of sexual union and making it an object in itself apart from its proper purposes.

“(iii.) It puts in a false light the distinction between married and unmarried in point of self-control: inasmuch as it implies that there is no self-control to be expected from the former.

“(iv.) The fact that medical journals of good standing refuse to accept advertisements of such drugs or appliances is very significant.

GENERAL DEATH RATE (ALL CAUSES) & ZYMOTIC DEATH RATE IN CHESHIRE 1904-1913.

GENERAL DEATH RATE  ZYMOTIC DEATH RATE. 



“(v.) In the course of our enquiry, evidence has come before us that, besides the practices which we have been considering which are intended to prevent conception taking place, there is a widespread use by women of drugs taken, after conception, to destroy the embryo in the womb. About this no language can be too clear or strong. Whether it is effectual in destroying the life of the embryo or, as often happens, only weakens and impairs the vitality of the infant when born, it is a grievously sinful attempt to destroy the life which God has given, from which the conscience of every woman ought to turn away in horror.

Deaths.

The total number of deaths during 1913 in the Administrative County numbered 7,867, namely, 2,541 in the six Municipal Boroughs, 3,241 in the 35 other Urban Districts and 2,085 in the 12 Rural Districts. The death-rate for the County, as a whole, was 12.82 per thousand living. The comparative figures for the rest of the country were :—

England and Wales ...	...	13.4
96 Great Towns ...	...	14.7
145 Smaller Towns ...	...	13.0
Rural Districts ...	...	12.0

In the six Municipal Boroughs of Cheshire taken together the death-rate was 14.74, in the 35 other Urban Districts 12.77 and in the 12 Rural Districts 11.12.

The death-rates varied considerably in the different districts.

The highest rates are recorded in the following districts :—

Buglawton U.D. ...	...	18.7
Stalybridge M.B. ...	...	18.0
Alsager U.D. ...	...	16.4
Congleton M.B. ...	...	16.1

The lowest rates are recorded in the following districts :—

Ycardsley-cum-Whaley U.D. ...	...	7.0
Chester R.D. ...	...	9.1
Alderley Edge U.D. ...	...	9.4
Bromborough U.D. ...	...	9.5
Bucklow R.D. ...	...	9.7
Hale U.D. ...	...	9.9
Wirral R.D. ...	...	10.0

The death-rate is a very little higher than it was during 1912. This is due, in my opinion, to the increased prevalence of

DEATHS—INFANTILE MORTALITY.

zymotic diseases and an increased infantile mortality. I give the death-rates in the county area for the past thirteen years.

DEATH-RATES PER 1,000 LIVING.				
Year.		Cheshire.		England and Wales.
1913	...	12.82	...	13.4
1912	...	12.52	...	13.3
1911	...	13.75	...	14.6
1910	...	11.75	...	13.4
1909	...	12.7	...	14.5
1908	...	13.1	...	14.7
1907	...	13.6	...	15.0
1906	..	13.7	..	15.4
1905	...	13.8	...	15.2
1904	...	15.7	...	16.2
1903	...	14.1	...	15.4
1902	...	14.6	...	16.2
1901	...	15.6	...	16.9

Infantile Mortality.

Many Medical Officers of Health give virtually no information at all on this important subject beyond the bare figures, though there must be occasions on which valuable comments could be made. Inasmuch as most of the Medical Officers of Health in the County are also engaged in private practice their comments would possess very great weight. It is not possible, in the absence of such information, for such a complete statement of this highly important question to be presented for the County as a whole as one would wish to give and one trusts that the little labour necessary will not be grudged in the future Reports of Medical Officers of Health.

Taking the Administrative County as a whole, the deaths of infants under one year of age numbered 1,382, equal to a rate per thousand registered births of 104. In England and Wales the comparative figure was 109, in the 96 great towns 116, in the 145 smaller towns 112 and in the Rural Districts 96. The figure for the Administrative County of Cheshire is thus a fairly favourable one. In the six Municipal Boroughs of Cheshire the rates recorded averaged 128, as compared with 106 in the 35 other Urban Districts and 77 in the 12 Rural Districts.

In the following districts infantile mortality ruled high:—

Compstall U.D.	...	...	157
Hyde M.B.	...	...	152
Hazel Grove U.D.	...	...	149
Stalybridge M.B.	...	...	147
Winsford U.D.	...	...	145
Dukinfield M.B.	...	...	139
Northwich U.D.	...	...	137

In the undermentioned districts the rates have been very low ones :—

Yeardsley-cum-Whaley U.D.	...	29
Bowdon U.D.	...	34
Alderley Edge U.D.	...	47
Buglawton U.D.	...	66
Knutsford U.D.	...	67

Some of the above figures are unquestionably accidental and are due to the smallness of the statistics concerned. A consideration of the statistics for the same districts over a period of five or 10 years would shew different results and it would be much more sound if Medical Officers of Health of small areas would in subsequent reports present important statistics in this form. In some of the districts of low infantile mortality there are probably factors concerned which, properly investigated and recorded, would throw useful light on some of the problems associated with this interesting question. There is a continuance of the decrease in the recorded mortality from such vague and indefinite headings as debility, atrophy, marasmus and convulsions indicating a gratifying transference to more accurately diagnosed causes.

It is interesting to note the infant mortality figures over a period of years for some of those districts where it usually rules high. Take the Municipal Boroughs first and observe the infant death-rate for the past ten years.

Year.	Congleton.	Crewe.	Dukinfield.	Hyde.	Macclesfield.	Stalybridge.
1902	129	131	184	186	102	176
1903	94	145	194	173	134	190
1904	190	160	198	198	178	210
1905	184	131	196	191	149	177
1906	112	118	176	153	123	206
1907	127	108	221	169	120	248
1908	129	103	214	169	137	219
1909	107	104	157	147	110	146
1910	118	103	163	141	103	166
1911	195	162	206	189	151	172
1912	106	82	145	112	115	137
1913	130	103	139	152	116	147

Dukinfield, Hyde and Stalybridge stand out as places in which the infant mortality rate has ruled high for some years.

INFANTILE MORTALITY.

The other three Boroughs are not in quite the same category though much more might be done to prevent such a serious loss of infant life. In the Boroughs of Stalybridge and Crewe the Early Notification of Births Act has been adopted and lady health visitors appointed. At Hyde this Act has also been adopted and a voluntary Ladies' Health Committee is at work giving advice and visiting mothers. The Act has also been adopted at Macclesfield and a Ladies' Health Association subsidised, it is believed, by the Corporation, is at work assisted by a paid health visitor. I believe the question is under consideration by the Congleton Borough Council.

The infantile mortality as it has been recorded in some of the working-class districts is given below.

Year.	Altrin- cham.	Ellesmere Port.	Hoole.	North- wich.	Runcorn.	Sand- bach.	Winsford
1902	133	126	74	130	140	80	126
1903	139	135	112	149	156	106	119
1904	183	109	188	162	203	147	134
1905	116	126	94	115	120	111	115
1906	117	133	106	140	157	85	166
1907	115	112	98	121	119	87	104
1908	148	116	93	157	119	111	156
1909	96	140	69	101	156	79	115
1910	103	84	109	112	139	56	84
1911	173	153	49	180	90	166	147
1912	87	101	93	89	115	83	102
1913	110	99	90	137	109	89	145

Here again we may single out the Urban Districts of Altrincham, Ellesmere Port and Whitby, Northwich, Runcorn and Winsford as areas where infantile mortality is unquestionably higher than it need be.

It is believed that out of all the districts concerning which figures are given the Urban Districts of Northwich and Ellesmere Port are the only ones in which the Early Notification of Births Act has been adopted and a lady health visitor appointed. The adoption of this Act is being considered at Runcorn and Winsford.

In small Urban Districts it is not easy to secure the appointment of a Health Visitor, but it is certainly open to the Councils

INFANTILE MORTALITY IN CHESHIRE, FROM 1876 TO PRESENT DATE.

1876 1881 1886 1891 1896
 TO TO TO TO TO
 1880 1885 1890 1895 1900 1901 1902 1903 1904 1905 1906 1907 1908 1909 1910 1911 1912 1913



to pay a small sum annually to the District Nursing Association and utilise her services in the visitation of mothers. Why this is not done it is difficult to conceive for the cost, which would only be from £10 to £20 per annum, should surely not act as a deterrent. Such a system is successfully at work in Knutsford and Middlewich on the suggestion of Dr. Garstang and in Nantwich on the advice, it is believed, of Dr. J. D. Munro.

The adoption of the Early Notification of Births Act is not entirely a matter for the decision of the District Councils, for the Local Government Board have to approve of the action of the local Council and in giving or withholding that approval the Board must be satisfied that some machinery exists or will be put into operation in the district for utilising the provisions of the Act for the control of infantile mortality. That is to say the Council must make some arrangement by means of the employment of Health Visitors or otherwise for domiciliary visitation and the tendering of personal advice to mothers in cases where such visits are deemed desirable. It is open to the County Council to adopt the Act for the whole of the Administrative County, but, like all Local Authorities, they would have to shew that they possessed or would put into operation the requisite machinery for effectively carrying out the intention of the Act. In a few Counties the County Council has adopted the Act and made arrangements for carrying it out. If such a system were adopted it might well include the supervision of midwives, the two things being carried out direct from the office of the County Medical Officer of Health, or as an alternative the County Council might retain the services of the nurses of the County Nursing Association where these are available. The Local Government Board have the power under Section 3 of the Act to declare the Act to be in force in the area of any Local Authority who have power to adopt it, notwithstanding such Local Authority has not adopted it, but in the provinces one has not so far heard of any such declaration having been made.

In some Counties where the Act has been adopted for the County as a whole it has been found advantageous to blend the appointment of Health Visitors with those of Tuberculosis Nurses and School Attendance Officers. Such a system, taking in the school medical inspection service as well, might be ultimately found both workable and beneficial in this County.

The following table shews the infantile mortality rate for the Administrative County and for England and Wales as far back as I can obtain reliable figures:—

INFANTILE MORTALITY.

		Cheshire.		England and Wales.		Large Towns.
1894	...	131	...	137	...	152
1895	...	163	...	161	...	182
1896	...	135	...	148	...	167
1897	...	155	...	156	...	177
1898	...	160	...	161	...	178
1899	...	158	...	163	...	181
1900	...	143	...	154	...	172
1901	...	150	...	151	...	168
1902	...	119	...	133	...	145
1903	...	126	...	132	...	144
1904	...	144	...	146	...	160
1905	...	119	...	128	...	140
1906	...	118	...	133	...	145
1907	...	112	...	118	...	127
1908	...	113	...	121	...	128
1909	...	99.3	...	109	...	118
1910	...	93	...	106	...	115
1911	...	121	...	130	...	140
1912	...	89	...	95	...	101
1913	...	104	...	109	...	116

The Registrar-General (Seventy-fourth Annual Report) discusses the causes leading to high infant mortality. He states that:—“

“The causes leading to the largest proportion of unnecessary deaths, and, by inference, the administrative measures necessary to combat them, can be discerned with equal clearness. The infantile mortality of the middle class from infectious disease is only 40 per cent. of that of the unskilled workers, and from tubercle and diarrhœa also it is less than 50 per cent. The particular infectious disease holding out the most promise of reduction would appear to be measles, and next to it whooping-cough. The others are comparatively unimportant till the first year is past. The mortality of infants from bronchitis and pneumonia is no doubt to a considerable extent associated with measles and whooping-cough. The great range of variation in mortality from these diseases according to social status is the more remarkable in contrast with the comparatively small excess of about 40 per cent. in the death-rate of illegitimate over that of legitimate children from the same causes. Possibly the explanation may lie in the frequency with which such cases originate in infection, either in the form of measles or whooping-cough which may not have attracted the mother's attention and may not therefore

be recorded in the Certificate, or in that of infection from other causes of bronchitis or pneumonia. The illegitimate infant is, it may be assumed, more frequently solitary than the legitimate, and so to a large extent escapes infection to which the legitimate infant is exposed from its elder brothers and sisters. This explanation of the contrasting facts is supported by the similar contrast in regard to infectious disease. The illegitimate infant, notwithstanding its inferior nurture, suffers practically no excess of mortality from infectious disease over the legitimate, but the unskilled labourer's infant is exposed to a mortality from this cause 150 per cent. in excess of that affecting the middle class baby. The excess of mortality from bronchitis and pneumonia is almost equally distributed amongst the various age groups; on the other hand loss of life from diarrhoea would seem to be much more avoidable amongst the older than the younger infants.

“Injury at birth causes as much loss of life in the middle as in the working-class. The figures appear to indicate either that few infants' lives are lost through lack of skilled attention at birth, or, what is perhaps more likely, that the greater skill and care bestowed upon the middle class birth only just compensates, so far as the child is immediately concerned, for the greater difficulty of the birth which this hypothesis would assume. Or again it may be suggested that impatience of suffering on the part of the middle-class mother leads to more interference with normal labour in this class, the infants suffering in consequence.

“Mortality from congenital malformations is, as might probably be expected, equal for all classes as well as being much the same for illegitimate as legitimate infants. There is no evidence here in favour of the popular belief that such developmental errors are in any way dependent upon the mother's mental condition, as those of fatal severity at least seem to occur with equal frequency to whatever influences she is subjected. It might of course be suggested that the more sheltered life of the middle-class woman is nicely calculated to compensate for her greater sensitiveness, but the very fact that such precision of adjustment has to be postulated must tell against the likelihood of any relationship of the kind. It should be noted however that the mortality of the children of textile workers from this cause is exceptionally high, for it may be that this is related to the fact that the wives of such workers frequently work in the mills themselves throughout the greater part of their pregnancies.

"Prematurity shows considerable variation in its fatality according to class, but this may be the effect either of pre-natal influence upon the mother, diminishing premature births amongst the well-to-do, or of post-natal influence on the child, preserving lives in one class too feeble to be saved under the less favourable circumstances of another. The figures relating to the indefinite heading "atrophy, debility and marasmus," suggest that at least after the first month of life is past most of these deaths could be avoided by better and more intelligent nurture. During the first month the difference between the classes, though considerable, is much smaller than afterwards; and it may well be that a large proportion of these deaths are due to congenital debility, owing to which the infant's prospects are hopeless from the moment of birth, progress in regard to such cases being possible only by improved ante-natal hygiene."

The good work being done to prevent infant mortality is well illustrated by the following extract from the "Macclesfield Courier and Herald" of June 20th, 1914, giving the Annual Report of the Public Health Society of that Borough.

The annual report stated:—"The Committee are able to report another twelve months' satisfactory work amongst the mothers and infants of Macclesfield and the result is shown in the diminished infantile mortality rate for 1913. The chief aim of this Society has always been to eradicate preventive deaths and to give those infants who survive a better start in life than they have hitherto had. The following statistics are furnished by the Medical Officer of Health:—

Infantile death-rate for 1911=151 per 1,000 born.

"	"	1912=115	"	"
"	"	1913=113	"	"

"There is still great danger that the rate may rise again a hot summer, when infantile diarrhœa becomes epidemic, but the Health Visitors are on the watch for the first symptoms and take all possible steps to prevent it spreading. The mothers also are beginning to realise the seriousness of the complaint which they have hitherto considered very lightly. The following statistics are furnished by the Health Visitors:—

		West Macclesfield and Sutton.		East.		Total.	
Births	425	...	308	...	733
Still Births	20	...	10	...	30

		West Macclesfield and Sutton.		East.		Total.
Deaths from all causes						
under one year	...	53	...	40	...	93
Deaths one month and						
under	...	28	...	18	...	46
Visits paid	...	4050	...	4514	...	8564

"From the above it will be seen that the number of still births and deaths under one month is still too large, practically the same as in the previous year and the problem of saving the child from injurious pre-natal influences has still to be solved. It is a very difficult problem, especially in an industrial community like Macclesfield, but it must be faced if this unnecessary loss of infant life is to be saved to the State. Mrs. E. Tootal Broadhurst continues to supply dinners to expectant and nursing mothers at the cost to them of 1d. each. These dinners are recognised as being one of the best means known of helping the mothers to bear and rear healthy children. A striking proof has been furnished by the fact that five women who previously had never been able to rear a child have, since attending the dinners, had infants who have lived. Since the dinners started in November, 1912, the number of dinners given was 5,356, representing a mothers' attendance of 392. No bottle-fed babies are allowed at these dinners; they therefore act as an incentive to natural feeding amongst mothers who are wavering between the two methods. It is the opinion of the Committee and Health Visitors that the women of Macclesfield willingly breast-feed their babies, but the fact that so large a proportion (34 per cent.) work in mills makes it an impossibility to do so. This is a very serious argument in favour of the abolition of child-bearing women workers in factories. Of the 93 deaths under one year nine were entirely breast-fed, 15 were breast-fed and bottle-fed and 27 were entirely bottle-fed. In 42 cases the method of feeding was not ascertained, as in most cases the death had occurred before routine visits commenced. The maternity benefit is a great boon to the mothers. If only some benefit could be paid during the last month of pregnancy to enable the working mothers to cease work and remain at home, one of the most powerful aids to the solution of the problem of still births would be supplied. The articles sold to the mothers are promptly paid for; very few "bad debts" are made and only in very exceptional cases is anything given. One very distinct improvement has taken place since the Society was started in 1902. At that time practically none

but long-tube feeding bottles were in use, whereas now the mothers very largely use the more hygienic type of teat and bottle, thereby lessening the probability of the diarrhœa scourge. It has taken years to accomplish this reform and serves as an example of what may be achieved by sheer dogged perseverance coupled with gentleness and sympathy."

"The balance sheet of the Society, in conjunction with the Macclesfield Corporation, for the past year is as follows: Receipts: March 31st, 1913, balance due to Treasurer, £250 13s. 6d.; March 31st, 1914, Macclesfield Corporation, £70; Macclesfield Borough Education Committee, £60; Macclesfield Public Health Society, £50; Bank interest, 4s. 2d.; total, £205 17s. 8d. Expenditure: March 31st, 1914, Salaries, £167 10s. 0d.; Insurance (National Health), £1 6s. 3d.; Uniforms for Nurses, £4; Rent, £10; Balance due by Treasurer, £23 1s. 5d.; total, £205 17s. 8d."

CREWE MUNICIPAL BOROUGH.—"The average annual number of deaths from diarrhœa alone in the 31 years 1881-1912 was 29. The diseases classified under these headings include some diseases outside the scope of the old classification of enteritis in this country, hence for comparative purposes only the deaths of children under 2 years of age are taken, so as to make the rates comparable with those prepared by the Registrar-General and by the Local Government Board.

"The eight deaths from this cause of children under 2 years of age occurred in the latter half of the year, three in the summer quarter, as compared with two in 1912 and 63 in 1911 and five in the last quarter. The excessively mild weather in the last quarter contributed to this prevalence of diarrhœa. Five of the eight children were entirely bottle-fed and the other three were partly bottle-fed.

"During 1913, in addition to the measures formerly in use for the prevention of this disease, the spraying of ashpits with chloros each time they were emptied, was adopted as a routine practice. Then in the schools large cartoons illustrating the life history of the house fly were used as the subject for lectures to the children and a crusade against the fly carried out through the elementary schools. By providing these illustrations and arranging for the lectures to be delivered the Education Committee have materially assisted the Health Committee in their efforts to spread knowledge and educate the juvenile population on an important public health question. By the adoption of the Notification of Births Act and the

visiting of infants thereby made possible, still further good preventive and educative work becomes possible."

DUKINFIELD MUNICIPAL BOROUGH.—"There were 72 deaths of children under one year, the average for the previous five years being 98. The mortality per thousand births registered was 139, compared with 145 in 1912, 206 in 1911, 163 in 1910, 157 in 1909, 214 in 1908, 221 in 1907, 176 in 1906, 196 in 1905, 198 in 1904, 188 in 1903, 182 in 1902 and 275 in 1901. The average for the previous five years was 177. Since 1901, when the infantile mortality in Dukinfield reached its high-water mark of 275, there has been a considerable decline. This year we are well below the average for the previous 10 years. The average for the years 1897 to 1901 (inclusive) was 239. The matter has always been well thought out by your Committee. Special treatment in the way of feeding young children by means of sterilized modified milk has in past years been adopted in order to reduce the mortality. For each monthly meeting a special report is prepared as the result of enquiries relative to the death of infants under twelve months. It is difficult to explain the high infantile mortality in these manufacturing districts and as yet I know of no definite cause as the result of these statistics.

"In May a deputation was appointed by your Committee to visit the towns of Huddersfield, Brighouse, Halifax and Keighley (1) to inquire as to the methods adopted in these towns to reduce infantile mortality and (2) to confer with their representatives on general sanitary administration. As the result of these interviews the deputation made the following recommendation to the Committee:—

- (1) The adoption of the Notification of Births Act, 1907;
- (2) The appointment of a lady health visitor with diplomas of the Sanitary Institute and Certificate as School Nurse and to be under the supervision of the Medical Officer of Health. Her duties to be as follows:—
 - (a) Visiting infants.
 - (b) Visiting tuberculosis cases.
 - (c) Inspecting midwives.
 - (d) Inspecting Factories and Workshops (female labour).
 - (e) General duties of School Nurse."

HYDE MUNICIPAL BOROUGH.—"The number of deaths of infants under one year of age was 110, giving an infant mortality rate of 152.3 per 1,000 births. Compared with 1912 the number of deaths is increased by 23 and with the average

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of the previous five years, is decreased by six. The average infant mortality rate for the previous five years is 152.

Table showing the infant mortality rate since 1893:—

Year.	Death- rate.		Year.	Death- rate.		Year.	Death- rate.		Year.	Death- rate.
1893	235.5	...	1898	232.7	...	1903	173.1	...	1908	169.3
1894	155.1	...	1899	256.2	...	1904	198.2	...	1909	147
1895	239.7	...	1900	190	...	1905	191.1	...	1910	141.08
1896	195.8	...	1901	198.7	...	1906	153.6	...	1911	189.9
1897	219.4	...	1902	186.4	...	1907	169.7	...	1912	112.5
									1913	152.3

“The infant mortality rate is far from satisfactory, although it is 12.2 per 1,000 lower than the average of the previous ten years. The members of the Ladies’ Health Society have been very active during the year and have undoubtedly done much good work. In addition to visiting the homes of the children, meetings have been held weekly in the Mechanics’ Institute, to which the mothers have been invited to bring their babies. The babies are weighed and the mothers given advice as to the proper methods of feeding and management. Much good might be done by teaching the laws of health and domestic hygiene in the public elementary schools and I consider a trained woman should be appointed to visit the homes of the mothers and give instruction in the feeding, clothing and up-bringing of the children.”

STALYBRIDGE MUNICIPAL BOROUGH.—“The infantile mortality of the Borough has upon many occasions in the past called forth much comment usually of a very adverse character; and so recently as last autumn the Borough was dubbed “the most deadly town” upon a report issued by the Medical Officer of the Local Government Board, from which it appeared that the average infantile mortality for the years 1907-11 was higher in Stalybridge than in any other town in either Lancashire or Cheshire. However, since the years 1907 and 1908, when the infantile mortality was 218 and 219 respectively, very great improvement has taken place and the infantile mortality has come down to below 150, viz.: 137 in 1912 and 147 in 1913—and I think this good result has been attained partly by improved sanitary conditions and partly by the efforts of Miss Hanson, our Lady Sanitary Inspector, who is a most zealous worker. Miss Hanson commenced her duties in February, 1908, and the Notification of Births Act, 1907, came into force in our Borough on March 1st, 1908. The Act has met with a

very ready response, both from the general public and from the midwives and there are very few births indeed which are not notified to me in accordance with its provisions. Information regarding these omissions is kindly given me by Mr. Flint, the Registrar of Births and Deaths. Very shortly after a birth has been notified Miss Hanson visits the home, gives advice *re* the feeding and management of the infant, notes any defects or insanitary conditions in or about the premises and reports thereon. Visits are again paid to these homes when the infants attain the age of three, six and nine months and reports are again made, while additional visits are paid whenever it is thought advisable. During the year she has paid 2,755 visits *re* births and 1,335 re-visits. Besides visiting the newly-born infants she also investigates all cases of deaths of infants under one year of age and in this connection she has inquired into the deaths of 88 infants. Of these she ascertained that 12 had never partaken of any food, 29 had been entirely breast-fed and 47 had been artificially fed. Her observations lead her to believe that breast-feeding is being more systematically and more persistently followed out than was the case during the earlier portion of her round of visits and that in case of serious disease medical advice is more promptly obtained. Of the deaths from "all other causes" 11 were due to convulsions, 11 to bronchitis and seven to pneumonia, a much smaller number from these usually common affections than in former years, indicating, I venture to think, greater care in infant feeding and the avoidance of undue exposure to cold.

"In an industrial community such as ours, the factors in the production of a high infantile mortality are both numerous and complex, as well as difficult to combat. When we find 44 still-births and 11 deaths entirely due to premature birth, besides numerous miscarriages, we realise that there are social conditions prevailing which militate most powerfully against infant development and with which it is well nigh impossible to deal. We can do and are doing much to remedy insanitary conditions and to instruct the people in the proper way of clothing and rearing their infants; but in these days of craving for pleasure and indulgence we can do little to correct the erroneous ideas that "limitation of family" is a desideratum and that a large family is an obstacle to material and social progress.

"I feel that I ought to here record the interest taken in the welfare of infants by Councillor Mrs. John Summers, who has not only visited many of the struggling poor and assisted them in the rearing of their infants, but also has organised a

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school for mothers in close association with the Sanitary Authority. It is also interesting to report that on November 3rd, 1913, Dr. Janet E. Lane-Claypon, one of H.M. Inspectors, paid a visit to our borough in order to obtain personal information as to the infant welfare work in Stalybridge. At an interview with me *re* infantile mortality, she went fully into Miss Hanson's work and afterwards accompanied Miss Hanson to many places in different parts of the town to see how her work was actually carried out, what difficulties she had to contend with, how her visits were received and the conditions under which the infants were being brought up. Whatever may have been Dr. Lane-Claypon's report to head-quarters I am convinced that her interview and visit were beneficial to all concerned."

BOLLINGTON URBAN DISTRICT.—"The infantile mortality rates for the five years 1909-13 were as follows:—

1909	...	77	per 1000 births registered.
1910	...	40	" " "
1911	...	155	" " "
1912	..	31	" " "
1913	...	133	" " "

"On enquiry into the causes of the 14 infantile deaths the most striking fact is that seven, or exactly one-half, are classified under the Registrar-General's heading of deaths from congenital debility and malformation including premature birth. The mothers of three only of these were mill workers. Of the remaining four one was a charwoman, whilst three did their own housework only. Four of the deaths were attributed to diseases of the chest, one being due to broncho-pneumonia and three to bronchitis. All these occurred within the first quarter of the year. There was only one death attributed to diarrhœa during the year.

"The infantile mortality rate for the year is thus a high one. The figures quoted above of the rates for the past five years shew the variableness of the rate. Climatic conditions and variations have their effect on infantile mortality. Four of the deaths this year occurring from chest troubles in the early months of the year. Only one from diarrhœa during the third quarter. Occupation of the mother has also an influence on the development and well-being of the new-born child, though this is more pronounced where food and nourishments are not sufficient in quantity nor satisfactory in quality. On the other hand regular occupation if not of too laborious

a character and if in healthy surroundings, especially if the mother is well fed, would not seem to be more detrimental than housework only. Proper feeding, clothing and cleansing of the child's body are essential matters to its growth in health and vigour.

"Wholesome surroundings of the house, a free supply of fresh air, not only without but within the house is all important to the well-being of the inmates. In this connection one notes with regret that all the time, attention and trouble given to the question of getting windows that can be opened put into the houses seems to be so much time wasted. It is indeed the exception to find an open bedroom window at any period of the year in the day time. The fear of draughts seems to have struck a permanent terror into the hearts of the inhabitants.

"The important matter of infantile mortality is kept to the fore by the Council and the means adopted to prevent this as far as possible are the same as summarised in previous annual reports. The thanks of the community are again due to the District Nursing Committee, to Nurse Ashton and to the three midwives for their help and assistance in this matter."

CHEADLE AND GATLEY URBAN DISTRICT.—"In April, 1907, a circular was issued by the County Medical Officer of Health, in which recommendations were formulated so as to prevent excessive infant mortality. A copy of these suggestions was printed in my annual report for the year 1907 and its recommendations are being carried out either by your Council or the various district nurses and district visitors with very satisfactory results, as the infant mortality as in the previous year is very low from preventable diseases."

HALE URBAN DISTRICT.—"During the year 18 deaths occurred of children under one year of age, constituting the infantile mortality. The rate for the year, estimated per 1,000 births registered, is 127.66. This is higher than that of any previous year, the only occasion on which the infantile mortality has exceeded 100, being 1905, 101.561, and 1911, 102. The rate for 1912 was 49.64, being the lowest recorded in the district.

"The causes of deaths in the local cases were as follows:—convulsions six, bronchitis one, pneumonia one, diarrhœa two, gastritis one, premature birth six, asphyxia neonatorum one. As regards rental the distribution was as follows:—

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	Under £16 (year)	£16—£24	Over £24	Totals
Premature Birth	2 ...	2 ...	2 ...	= 6
Convulsions	— ...	4 ...	2 ...	= 6
Diarrhoea	— ...	2 ...	— ...	= 2
Other Diseases	2 ...	1 ...	1 ...	= 4
Totals	4	9	5	18

“It is particularly disappointing to me that this infantile mortality rate is so high. What strikes me at once is the number of deaths due to premature birth and convulsions and I certainly think that it would be well to adopt the Notification of Births Act and work it in conjunction, if possible, with neighbouring authorities.”

KNUTSFORD URBAN DISTRICT.—“The District Nurse continues to work under the Notification of Births Act. In 1913 she had on the average 60 babies on her list and she paid 1.095 visits. She notified to me four still-births, eight deaths and seven removals. The infant mortality figures have been:—

Average of 5 years	1895—1899	... 153
„ „ „	1900—1904	... 120
„ „ „	1905—1909	... 88
„ „ „	1910—1914	... 83

“This shows that gratifying and steady improvement has been going on ever since the district was formed. It also shows that nearly the whole had occurred before the Notification of Births Act was taken up.”

NANTWICH URBAN DISTRICT.—“The babies’ day nursery is open daily (Sundays excepted) from 7-30 a.m. to 6-30 p.m. Saturdays 7-30 a.m. to 1 p.m. A change to smaller premises was considered advisable, chiefly because of the decrease in the number of children sent to the nursery. Various sanitary improvements were required in the new nursery and these were carried out at Lady Cotton-Jodrell’s expense. Certainly the mothers who work in the factories are slow to appreciate the advantages of this day nursery, for there has been a marked falling off in the number of children sent during the last year. If more use was made of the nursery I feel sure the health of many badly nourished children would be improved and the infantile mortality reduced, as so many infantile deaths are due to improper feeding. Thirty babies were nursed during the year and the number of attendances were 2,711.”

WILMSLOW URBAN DISTRICT.—“The Notification of Births Act has not been adopted as the district midwife has hitherto attended most of the working women in their confinements and is well qualified to give them advice on the care of their infants. Printed cards of instructions to mothers are distributed.”

Notification of Births Act.

CONGLETON MUNICIPAL BOROUGH.—“The adoption of this Act engaged your attention on several occasions during the year, as well as on several occasions in former years and it is understood you have been unable to decide definitely one way or the other.”

CREWE MUNICIPAL BOROUGH.—“Turning to the causes of infant deaths it will be noted that in 1913 premature birth gave rise to the highest percentage. Many influences are at work to produce this undesirable result and one would emphasize the importance of ante-natal hygiene to the mothers of the country; the healthier and better-cared for the mother is, by so much will the infant's prospects of good health and vitality be improved.

“It is gratifying to be in a position to record the adoption of the Notification of Births Act.

“Towards the end of the year, when the organisation of a Dental Clinic was under consideration, it was decided to appoint a Lady Health Visitor and Dental Clinic Nurse, part of whose duties as a Health Visitor was to be concerned with the visitation and following up of all notified births.

“The Act came into force on December 1st, 1913. Upon receipt of the notification of a birth from either doctor, midwife, or parent, the home is visited and enquiries made into the various questions which affect the well-being of the infant. Advice as to methods of feeding, etc., are given where required and such infants as are found to be artificially fed are re-visited at regular intervals. In addition to this the Lady Health Visitor gives talks to mothers at Mothers' Unions and Mothers' Meetings in various parts of the town and the public are indebted to the clergy and ministers of the borough for their cordial co-operation in this work.

“The following facts were ascertained as the result of inquiry by the Health Visitor. The largest proportion of the births notified were attended by midwives—hence the need for great

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care and skill on the midwife's part. Breast feeding predominates at first, as many mothers endeavour to give nature's food to their children. Where artificial food was given, the long tube feeding bottle was most used. This is a most undesirable practice and a source of great danger to the infant in the early days of its life. Only one baby out of 90 visited was found to sleep alone. The size of some of the households was large: out of 90 families 38 varied in size from four to 14 children, but 11 was the largest number of living children found in any one family."

DUKINFIELD MUNICIPAL BOROUGH.—"The question of the appointment of a Lady Health Visitor to assist the Health Department in its increased work has also been under consideration and a Voluntary Ladies' Public Health Society has been formed in the town with the object of assisting the Council in this matter."

ALTRINCHAM URBAN DISTRICT.—"A scheme is in contemplation to provide a Health Visitor in conjunction with the Hale and Bowdon Districts, under the Notification of Births Act, 1907. The details are not yet settled."

LOWER BEBINGTON URBAN DISTRICT.—"The Notification of Births Act, 1907, has been adopted, but no Health Visitor has been appointed to deal with the notifications. The delay in the completion of the necessary machinery for carrying out the valuable work done under this Act has in part been due to the circumstance that it was considered likely that the County Authorities would appoint Health Visitors whose duties would not be confined to the special procedure of the Act, but would extend to tuberculosis and school work. As it is no longer probable that the County Council will concern themselves directly in the manner suggested, I have no doubt that a Visitor will be at once appointed."

BREDBURY AND ROMILEY URBAN DISTRICT.—"The Notification of Births Act, 1907, has not been adopted in this district. The Local Government Board Order, dated 25th July, 1913, *re* this subject, is still under consideration. Note has been taken of the advice contained therein, *re* conditions favouring infant mortality and the Medical Officer of Health has acted on this advice as far as possible. Books of instructions on infant feeding, etc., are distributed free to those having the care of young children. The Registrar of Births is kept supplied with copies of these books and he has kindly agreed to distribute them to each person coming to him to register a birth and in that way they

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reach the parent at an early date and I believe have been found useful. There have been 13 deaths of children under the age of one year; this is at the rate of 76 per thousand registered births. This is the lowest death-rate in infants I have recorded during the past 23 years and compares very favourably with that of neighbouring towns and other parts of the country. It is partly accounted for, no doubt, by the favourable summer, in so far as there was no epidemic of summer diarrhœa, which is always so fatal to infants, especially to those which are being fed artificially."

CHEADLE AND GATLEY URBAN DISTRICT.—"The Early Notification of Births Act, 1907, has not been adopted. When your Council considered the question of adopting the Act it was decided not to do so, as nearly all the cases were attended by medical men and in the few cases which are not and where it has been found necessary to give advice, the various district nurses have taken the matter in hand or reported the case. So far this arrangement continues to work well."

ELLESMERE PORT AND WHITBY URBAN DISTRICT.—"As the Notification of Births Act has been adopted it will now be necessary to appoint an official to carry out the duties of this Act and the person appointed ought to have the Certificate of the Royal Sanitary Institute or some equivalent qualification."

HOOLE URBAN DISTRICT.—"The Notification of Births Act, 1907, has not been adopted in this district, but the Council on the 10th of November last passed the following resolution:—

'That the Clerk communicate with the Cheshire County Council
'that the Hoole Urban Council is willing to adopt the Act, if a
'joint arrangement could be made with the adjoining districts,
'whereby the expense necessary to its effectual working might
'be minimised.'

If a trained nurse could be provided for the districts of Hoole and Newton to combine the duties of a district sick nurse with the visiting work that would be necessary under the Notification of Births Act the difficulty would be solved and a great boon conferred upon the working classes of the neighbourhood."

MIDDLEWICH URBAN DISTRICT.—"The Notification of Births Act has been in force for four years. The Lady Health Visitor has paid numerous visits and instructed the mothers in the care of feeding of their infants."

NOTIFICATION OF BIRTHS ACT—ILLEGITIMATE INFANTS.

NORTHWICH URBAN DISTRICT.—“The Notification of Births Act is now adopted and all houses where births have occurred are visited by the Health Visitor and their environment supervised. Of the children born during the year 27 have died. Each case of the death of an infant is the subject of a special visit and report by the Sanitary Inspector. Any sanitary defects thus found are remedied. Two were thus cured by verbal request to the owner.”

NANTWICH RURAL DISTRICT.—“The Notification of Births Act is not in force in the district. I should greatly value the early information as to births, which this Act is capable of affording, if only I could make use of this information when obtained. With our present staff I could not make proper use of it and so cannot recommend the Council to adopt the Act unless they would give me the services of a female Health Visitor to keep touch with the mothers of the newly-born children. Such a Health Visitor might do much in the prevention of infantile mortality and might also keep in touch to a much greater extent than is possible at present with the cases of tuberculosis. I still distribute a booklet on the management of babies, through the midwives of the district, to the mothers of infants, but personal advice would be of much greater value. The number of deaths under one year of age was 83 per 1,000 births registered. Though this number compares favourably with the infantile death-rates of adjoining Urban Districts (being exactly two-thirds of that of the Nantwich Urban District) I think it is capable of further improvement. It is not a nice thought that one child of every twelve born dies before it reaches the age of one year.”

Illegitimate Infants.

The only Report which contains an allusion to this matter is that for the Borough of Crewe. This Report shews for a number of years the death-rate amongst illegitimate children and with four exceptions (1900, 1909, 1912 and 1913) this is higher than that of children born in wedlock—see Table below.

	1901	1902	1903	1904	1905	1906	1907	1908	1909	1910	1911	1912	1913
Infantile Mortality of legitimate children ...	180	130	147	159	131	118	108	101	106	102	162	82	106
Infantile Mortality of illegitimate children...	200	156	166	162	256	224	142	166	68	116	209	80	47

STILL-BORN CHILDREN—DEATHS FROM ZYMOTIC DISEASE.

The experience in England and Wales is that illegitimate infants have only about half the chance of life of those born in wedlock.

The Registrar General in his Seventy-fourth Annual Report states that:—

“The mortality of illegitimate exceeds that of legitimate infants most of all in the case of deaths attributed to syphilis, being over eight times as heavy. Probably there is much less reluctance to certify the true cause of death in such cases for illegitimate infants, but the difference is greater than could well be explained in this way, and it is, moreover, of a nature to be expected from the circumstances of the case. Fatal injury at birth is very much commoner with illegitimate infants. No doubt many of the confinements take place under disadvantageous circumstances.”

Still-born Children.

Again there is only one reference to this important matter in the reports received, namely, in the Borough of Crewe, in which it is stated that during 1913 there were 69 still-born children interred in the Borough Cemetery, a number equivalent to 6.82 per cent. of the total births. The registration of every still-birth under a certificate signed by a medical practitioner should be made compulsory, for there is little question that many so-called still-births are not such at all—the life has been stilled purposely either during or immediately after birth. It is not sufficiently known that *the adoption of the Notification of Births Act ensures the notification of all cases of still-birth*—an additional argument for the putting in force of this most useful measure.

Deaths from Zymotic Disease.

The deaths included under this heading are those from certain zymotic diseases specially scheduled by the Registrar-General, namely:—small-pox, scarlet fever, measles, diphtheria (including membranous croup), whooping-cough, fever (typhus, typhoid, continued and ill defined fevers of uncertain origin) and diarrhoeal diseases of zymotic origin. The death-rate in the Administrative County from this group of diseases during 1913 was 1.04 per thousand of the estimated population. In the 6 Municipal Boroughs it was 1.3, in the 35 other Urban Districts 1.11 and in the Rural Districts 0.52 per thousand of the estimated populations. Almost in all districts this death-rate was higher than it was in 1912.

DEATHS FROM ZYMOTIC DISEASE.

Under this heading there were 616 deaths in the County, a number somewhat higher than that recorded during the previous year.

The rates appear to have been unusually high in the following areas:—

Buglawton U.D.	...	...	2.7
Dukinfield M.B.	...	...	2.7
Congleton M.B.	...	...	2.63
Runcorn U.D.	...	...	2.33
Sandbach U.D.	...	...	2.33

Death from diarrhœal diseases (277), measles (100), whooping-cough (94) and diphtheria (86) were the chief causes of the zymotic mortality. Scarlet fever and "fever" caused but a small mortality during 1913 (34 and 24 deaths respectively).

The deaths in the Administrative County from the various components of this general cause of death have been as under:

Small-pox	...	...	none
Measles ...	...	...	100
Scarlet fever	...	...	34
Diphtheria	...	...	86
Whooping-cough	...	...	94
"Fever"	...	...	24
"Diarrhœa"	...	...	277
Total deaths			616

The death-rates in Cheshire (Administrative County) and England and Wales from this class of disease for the past ten years have been as under:—

Year.	Cheshire.	England and Wales.
1913	1.04	...
1912	0.78	...
		This figure is not now quoted by the Registrar-General
1911	1.80	1.88
1910	0.77	1.23
1909	0.66	1.12
1908	1.13	1.29
1907	1.14	1.26
1906	1.27	1.73
1905	1.10	1.52
1904	1.84	1.94
1903	1.15	1.46
1902	1.19	1.64

DEATHS FROM ZYMOTIC DISEASE—SCARLET FEVER.

The rate for 1913 thus stands out as the lowest rate but two on record during this period. This rate is subject to somewhat extreme fluctuations, chiefly due to the prevalence and fatality of diseases which are apt to occur in epidemic outbursts and therefore too much must not be made of the statistics of a single year. A comparison with the records of previous years as to deaths from the several zymotic diseases is useful and interesting.

Presented as rates per thousand persons living these may be arranged as follows, comparative figures being given for the ten preceding years:—

Year.	1913.	1912.	1911.	1910.	1909.	1908.	1907.	1906.	1905.	1904.	1903.	England & Wales. 1913.
Smallpox ...	0.001	0.00	0.001	0.001	0.0	0.0	0.0	0.0	0.0	0.03	0.02	0.00
Measles ...	0.16	0.23	0.22	0.13	0.18	0.21	0.35	0.13	0.23	0.48	0.10	0.28
Scarlet Fever ...	0.05	0.05	0.04	0.07	0.12	0.12	0.10	0.11	0.09	0.10	0.15	0.06
Diphtheria and Membranous Croup ...	0.137	0.10	0.12	0.16	0.11	0.15	0.14	0.15	0.17	0.15	0.13	0.12
Whooping Cough	0.15	0.15	0.20	0.18	0.06	0.23	0.25	0.14	0.16	0.35	0.32	0.14
Fever ...	0.038	0.04	0.05	0.07	0.06	0.08	0.06	0.09	0.10	0.11	0.06	0.04
Diarrhoea ...	0.44	0.20	1.14	0.13	0.22	0.34	0.19	0.65	0.35	0.62	0.32	0.55
Total rate ...	1.0	0.19	0.78	0.77	0.66	1.13	1.14	1.27	1.10	1.84	1.15	

With the exception of the diarrhoeal death-rate the figures for 1912 and 1913 are seen to present but little difference.

Scarlet Fever.

There were 34 deaths due to this disease during 1913, namely, 17 in the Municipal Boroughs, eight in the 35 other Urban Districts and nine in the 12 Rural Districts. The death-rate from this disease in the Administrative County was 0.05 per thousand persons living.

Last year there were 37 deaths from this disease in the Administrative County, the death-rate per thousand of the estimated population being the same as in 1913.

DIPHTHERIA AND MEMBRANOUS CROUP—WHOOPIING-COUGH.

The fall in the mortality from scarlet fever during the past 40 years has been remarkable, not only in this County but throughout the whole country. The type of disease prevalent of recent years is totally different from what it was say 20 years ago, though in one of the reports reference is made to a reversion to the old severe type in a few cases. The disease still remains exceedingly fatal to children under the age of 10 years and particularly to children in the first five years of life. The decline in scarlet fever mortality as a whole is now regarded as being due to a milder form of infection rather than a diminished occurrence of the disease.

Diphtheria and Membranous Croup.

The number of deaths due to these causes during 1913 in the Administrative County was 86, a number equal to a death-rate of 0.137 per thousand persons living. This is an increase of 12 deaths as compared with the record of 1912.

The deaths numbered 18 in the six Municipal Boroughs, 54 in the 35 other Urban Districts and 14 in the 12 Rural Districts. The largest number of deaths occurred in Runcorn Urban District, which suffered from a sharp outbreak of the disease.

Diphtheria still continues to be much more destructive in the town than in the country, although it was in early years considered to be mostly a disease of rural districts. This fact is particularly noticeable in children under 5 years of age, who die of it practically at twice as great a rate in urban areas as they do in rural. In England and Wales the mortality from this disease in children under 5 years of age has practically been halved since 1901, but this diminution does not hold in children slightly older, *i.e.*, in the 5—10 year period of life who are living in rural areas, though it does hold for such children residing in urban areas. This decline in the mortality is almost without doubt due to the use of antitoxin. The number of Local Authorities supplying antitoxin free of charge to necessitous cases continues to increase.

Whooping-cough.

The deaths ascribed to this cause numbered 94, equal to a death-rate of 0.15 per thousand persons living. The deaths occurred as under:—

6 Municipal Boroughs	...	...	45 deaths.
35 Other Urban Districts	...	...	29 „
12 Rural Districts	...	...	20 „

This is a slight decrease on the previous year.

There were 25 deaths in Congleton, but the numbers were not at all serious in any other district.

Whereas measles, scarlet fever and diphtheria are more fatal in the second and fourth years of life, whooping-cough is more fatal in the first year of life than in any subsequent year of the first five. Whooping-cough mortality is curiously enough usually greater amongst girls than amongst boys. In Urban areas children die from whooping-cough at a greater rate than in Rural areas, in some instances the mortality being from five to seven times as great in crowded Urban Districts as in the less populous Rural Districts, probably owing to the greater prevalence of overcrowding and the consequently greater incidence of broncho-pneumonia.

The Registrar-General in his Seventy-fourth Annual Report (1911) states that:—

“Tubercle is not much more frequently recorded as a complication of whooping-cough than of the other important epidemic diseases. But the case of whooping-cough differs from those of the others in that the percentage of deaths so returned was very much higher amongst those occurring in institutions than elsewhere, the proportions being 5.8 per cent. in institutions against 1.8 per cent. elsewhere. These figures are in marked contrast with those recorded for measles, and suggest that tubercle is a more frequent complication of fatal whooping-cough than would appear from the general certification of the deaths. It is more frequently recorded of males (6.5 per cent. of deaths in institutions and 1.8 per cent. of deaths elsewhere) than of females (5.2 and 1.6 per cent. respectively).”

CONGLETON MUNICIPAL BOROUGH.—“A more extensive and fatal epidemic than has been experienced in the last 30 years began in February and continued till the end of August. There were 25 deaths all under 2 years, except three and 15 of them were under 1 year. School attendance was much interfered with and some of the schools were closed for a time, but notwithstanding this and that every effort was made to isolate infected children, no impression seemed to have been made in the progress of the epidemic, which gradually wore itself out. It is doubtful whether much can be done in epidemics of this disease and measles to lessen the number of cases and the mortality. During the year you had under consideration the matter of making both diseases notifiable, but the Medical Officer felt constrained to advise that while

WHOOPING-COUGH—MEASLES.

the expense of notification would be considerable, the advantage to be gained would be slight and even to gain this small advantage it would be necessary to go to the further and much greater expense of providing a number of assistants at an epidemic time to be constantly visiting the homes with a view to controlling the movements of infected children."

ALSAGER URBAN DISTRICT.—"Towards the end of October a few cases of whooping-cough appeared. These increased in November and in December the disease attacked many children in the infant school. This epidemic was spreading when the school closed for the Xmas holidays. To combat this epidemic I gave the school mistress instructions to send from school those who whooped, were sick, or suffered from spasmodic cough suspicious of whooping-cough. With the exception of this epidemic the juvenile population has been healthy and the adult population has been as healthy as usual."

Measles.

This disease was only seriously prevalent in Neston and Parkgate and Sandbach Urban Districts during 1913 but nevertheless caused 100 deaths. Public apathy to this disease is still the greatest obstacle for health officials to overcome and until the disease becomes as much dreaded by the public as small-pox it is feared that but little can be done in the way of preventing these sacrifices of children.

CREWE MUNICIPAL BOROUGH.—"The number of deaths from measles was six and the cases notified from schools numbered 260.

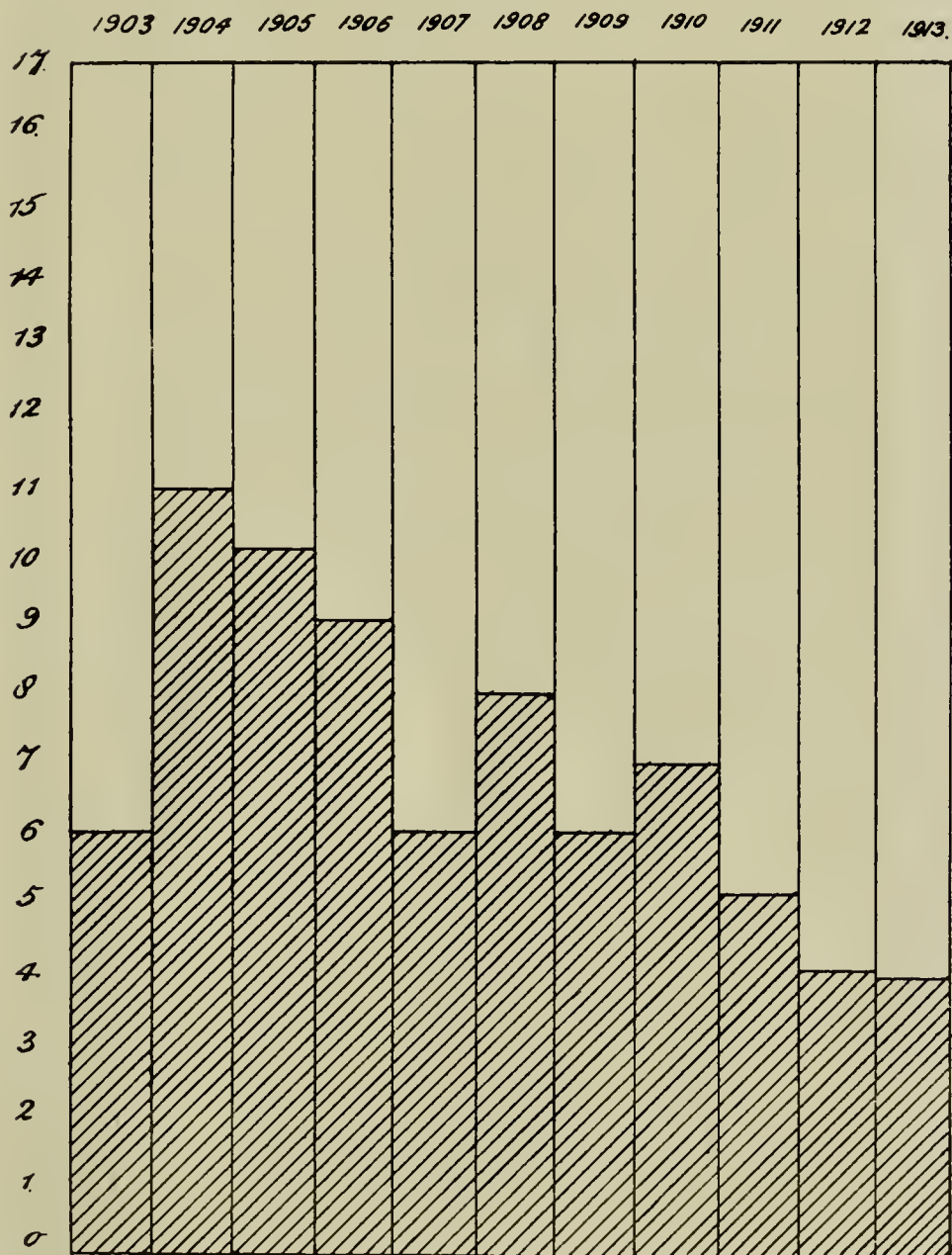
"The number of deaths registered is 16 less than in the preceding year. The average annual number of deaths during the 32 years (1881-1912) was 11.

"The epidemic began in October, 1912, continued till the end of that year and on into the early months of 1913. The end of that year and on into the early months of 1913. It is satisfactory to find that no deaths occurred among the scholars infected.

"The six deaths registered were all of children under three years of age, one was two weeks old, one three months, one nine months, one one year and two two years. The complications in four of these cases were pneumonia, bronchitis and cerebral congestion, bronchitis and congestion of lungs and convulsions

DEATH RATE FROM "FEVER" IN CHESHIRE,

1903-1913.





“School Teachers assist the Public Health Department very much by forwarding daily returns of the children absent from school through measles and whooping-cough. The homes of these cases are at once visited by the Sanitary staff and advice given by means of leaflets as to the needful precautions against infection. Where no medical advice has been obtained the parents are urged to call in their doctor and the dangers of complications explained to them. To the efforts of your Public Health staff in carrying out this educational work may be attributed, in some measure at least, the lessened mortality in the recent epidemic. Greater care on the part of parents in isolating the first case which occurred in their family and maintaining adequate isolation for three weeks would go far in lessening the prevalence of measles and reducing the mortality in epidemic times.”

STALYBRIDGE MUNICIPAL BOROUGH.—“This disease is not notifiable, but cases came to the knowledge of the Sanitary Authority through the School Attendance Officers. A handbill, similar to that distributed in the year 1907 when we had a severe epidemic of the disease, was distributed in the immediate neighbourhood of known cases and this no doubt assisted greatly in checking its spread and in lessening its ill-effects. Only four deaths took place—two in infants between 6 and 8 months of age, one in a child between 1 and 2 years of age and one in a child aged 8 years.”

NANTWICH URBAN DISTRICT.—“The Sanitary Inspector reports:—Two distinct epidemics of measles have occurred during the year, one in the first quarter and the other in the fourth quarter. The scholars chiefly affected were those attending the Infants' Department of the Church Schools, Market Street and the County Council School in Manor Road. The epidemic continued to spread and all the elementary schools were closed from January 9th to February 3rd. The disease again became prevalent in November and the Church Schools, Market Street and County Council Schools, Manor Road, were closed until after the Christmas holidays. During the holidays the schools were thoroughly cleansed and disinfected. Unclaimed hats, caps and wearing apparel left in the cloakrooms which might retain infection were destroyed by fire.”

Fever.

This term which is now practically obsolete embraces typhus, typhoid or enteric and other continued fevers. Seeing that typhus fever is extinct except for very rare and isolated cases and that continued fever is synonymous with enteric or

FEVER—DIARRHOEAL DISEASES—RESPIRATORY DISEASES.

typhoid fever, this group of diseases may be looked upon as representative of typhoid fever only. The deaths due to "fever" in the Administrative County during 1913 numbered 24, equal to a rate per thousand persons living of 0.038. The death-rate from this disease or group of diseases has not been a high one in the County for a long time and it has been steadily diminishing for many years as may be seen from the accompanying chart.

The mortality from typhoid fever has dropped considerably during the course of the last 30 years. The drop was very marked during the first 20 years of that period, but during the past 10 years it has not been so great. This diminution in mortality is due rather to lessened prevalence than to a diminution in the fatality rate amongst those attacked. Another fact worthy of note is that enteric fever is enormously more fatal in the town than in the country and that both in town and country the death-rates in males above the ages of 10 years considerably exceed those in females. There was no special prevalence of the disease in any part of the County during the year, though the Borough of Hyde shews by far the highest number of deaths under this heading.

Diarrhoeal Diseases.

There are 277 deaths recorded in the Administrative County as due to diarrhoea and enteritis, a number about double that for 1912. The diarrhoeal death-rate was 0.44 per thousand persons living, a figure which has not been exceeded since 1906. The deaths occurred as under:—

6 Municipal Boroughs	...	113 deaths.
35 Other Urban Districts	...	124 „
12 Rural Districts	...	40 „

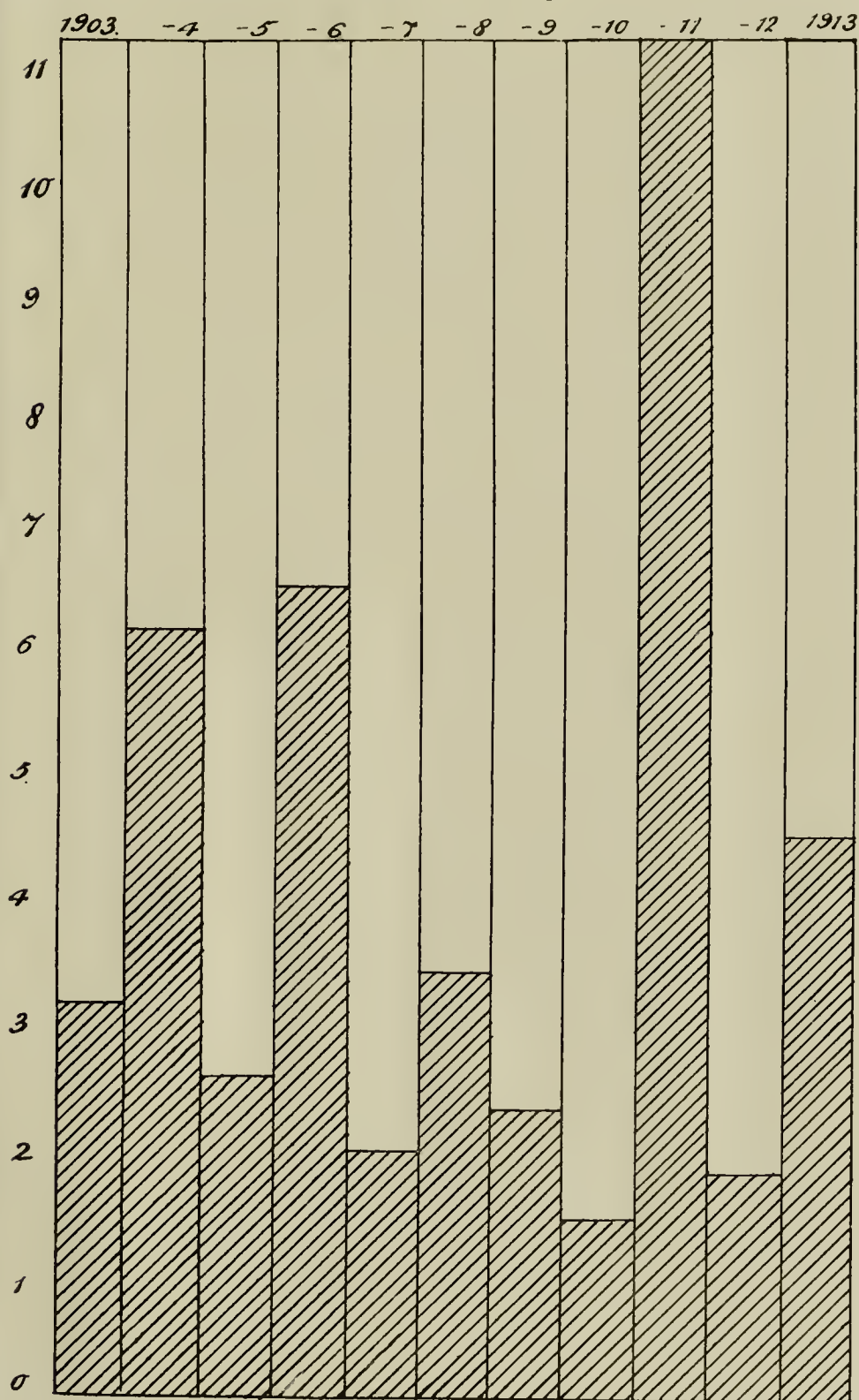
Dukinfield and Stalybridge Municipal Boroughs had a somewhat large share of these deaths, namely, 39 and 31 respectively. The Urban Districts of Altrincham, Northwich, Runcorn and Winsford and the Rural District of Runcorn suffered rather heavily from diarrhoeal prevalence.

Respiratory Diseases.

Included under this heading are bronchitis, bronchopneumonia, pneumonia and pleurisy. The total deaths in the Administrative County during 1913 from this group of diseases were 1,177, equal to a death-rate per thousand persons living of 1.8. The death-rate from this group of diseases during the past ten years has been as follows:—

DEATH RATE FROM DIARRHOEAL DISEASES.

— 1903-1913. —



Year.			Death-rate.
1913	..	...	1.8
1912	...	...	2.03
1911	...	...	1.97
1910	...	...	1.8
1909	...	...	2.3
1908	...	...	2.08
1907	...	...	2.2
1906	...	...	2.12
1905	...	...	2.26
1904	...	...	2.52
1903	...	...	2.22
1902	...	...	2.58

There is thus a perceptible decline in the death-rate from this class of disease, the rate recorded for 1913 being the third lowest for over 10 years.

Lobar pneumonia is now definitely recognised as one of the infective diseases and for a good many years there has been a tendency amongst all connected with preventive medicine to regard most forms of pneumonia as to some extent at all events infective.

The mortality from pneumonia has been found to be greater in town than in country districts by more than 75 per cent. In general the mortality of males greatly exceeds that of females and amongst children under the age of 5 years pneumonia is particularly fatal.

The death-rate from lobar pneumonia has varied considerably during 1913 in the various districts in the County. The highest rate is that recorded in the Hollingworth Urban District, where it was 1.9 per thousand of the population. In the districts of Stalybridge Municipal Borough, Ellesmere Port and Whitby Urban District and Congleton Rural District it reached 1.4. In Buglawton Urban District and Tintwistle Rural District it was 1.3 per thousand, in Hazel Grove and Bramhall Urban District it was 1.2 and in Congleton Municipal Borough it was 1.1. The lowest rates are recorded in the following districts:—

Ashton-upon-Mersey U.D.	...	0.0
Marple U.D.	..	0.1
Knutsford U.D.	...	0.1
Cheadle and Gatley U.D.	...	0.2
Nantwich U.D.	...	0.2
Malpas R.D.	.	0.2
Bowdon U.D.	...	0.3
Wilmslow U.D.	...	0.3

Table shewing Death-rate from Pneumonia per 1,000 of population.

MUNICIPAL BOROUGH—					
Congleton	...	...	...	...	1.1
Crewe	...	...	...	...	.6
Dukinfield	...	...	...	...	1
Hyde	...	...	...	...	.9
Macclesfield	...	...	...	...	.7
Stalybridge	...	...	...	...	1.4
OTHER URBAN DISTRICTS—					
Alderley Edge	...	...	...	...	.9
Alsager	...	...	...	...	1
Altrincham	...	...	...	...	.9
Ashton-upon-Mersey	...	...	...	...	—
Higher Bebington	...	...	...	...	.5
Lower Bebington	...	...	...	...	.8
Bollington	...	...	...	...	.5
Bowdon	...	...	...	...	.3
Bredbury & Romiley	...	...	...	...	1
Bromborough	...	...	...	...	1
Buglawton	...	...	...	...	1.3
Cheadle & Gatley	...	...	...	...	.2
Compstall	...	...	...	...	1
Ellesmere Port & Whitby	...	...	...	...	1.4
Hale	...	...	...	...	.8
Handforth	...	...	...	...	1
Hazel Grove & Bramhall	...	...	...	...	1.2
Hollingworth	...	...	...	...	1.9
Hoole	...	...	...	...	.6
Hoylake & West Kirby	...	...	...	...	.6
Knutsford	...	...	...	...	.1
Lymm	...	...	...	...	.7
Marple	...	...	...	...	.1
Middlewich	...	...	...	...	.6
Mottram	...	...	...	...	.6
Nantwich	...	...	...	...	.2
Neston & Parkgate	...	...	...	...	.4
Northwich	...	...	...	...	.7
Runcorn	...	...	...	...	1
Sale	...	...	...	...	.9
Sandbach	...	...	...	...	1
Tarporley	...	...	...	...	.8
Wilmslow	...	...	...	...	.3
Winsford	...	...	...	...	.8
Yeardsley-cum-Whaley	...	...	...	...	—
RURAL DISTRICTS—					
Bucklow	...	...	...	...	.6
Chester	...	...	...	...	.9
Congleton	...	...	...	...	1.4
Disley	...	...	...	...	.6
Macclesfield	...	...	...	...	.4
Malpas	...	...	...	...	.2
Nantwich	...	...	...	...	.9
Northwich	...	...	...	...	.8
Runcorn	...	...	...	...	1
Tarvin	...	...	...	...	.9
Tintwistle	...	...	...	...	1.3
Wirral	...	...	...	...	.7

EPIDEMIC INFLUENZA—PULMONARY TUBERCULOSIS.

Epidemic Influenza.

During 1913 there occurred 28 deaths in the County as the direct or indirect result of this disease. This shows a distinct decrease on the records of the previous year.

Pulmonary Tuberculosis.

This disease claimed no fewer than 428 victims during 1913 in the Administrative County, a number equal to a death-rate of 0.69 per thousand persons living. This is a slightly more favourable rate than that recorded for the past year. There were 143 deaths from pulmonary tuberculosis in the six Municipal Boroughs, 181 in the 35 Urban Districts and 104 in the 12 Rural Districts. For some years I anticipate that two opposing factors will influence the death-rate from phthisis—the improvement of methods of diagnosis both clinical and bacteriological and the increasing attention to preventive and curative methods. Whether these will counterbalance each other it is not easy to say. As the matter is one of very considerable interest, I append the rates for the County of Cheshire and for England and Wales so far as the latter are within my reach:—

Year.	England and Wales.		County of Cheshire.	
1892	...	—	...	1.31
1893	...	—	...	1.25
1894	...	—	...	1.12
1895	...	1.426	...	1.22
1896	...	1.327	...	1.14
1897	...	1.356	...	1.09
1898	...	1.325	...	1.14
1899	...	1.339	...	1.06
1900	...	1.337	...	0.95
1901	...	1.264	...	1.02
1902	...	1.233	...	0.97
1903	...	1.203	..	0.86
1904	...	1.236	...	0.89
1905	...	1.140	...	0.76
1906	...	1.150	..	0.89
1907	...	1.140	..	1.08
1908	...	1.11	...	0.76
1909	...	1.08	...	0.74
1910	...	1.03	...	0.71
1911	...	1.015	...	0.85
1912	...	—	..	0.75
1913	...	—	...	0.69

PULMONARY TUBERCULOSIS—OTHER TUBERCULAR DISEASES.

The death-rate from pulmonary tuberculosis shews a decrease during the past 22 years, which has been fairly gradual and steady throughout and provided public and private efforts for the control of the disease are maintained at a high level this decrease ought to be continued until the disease becomes extinct.

The number of deaths from this disease appear to have been a rather high one in the Borough of Stalybridge, the Urban Districts of Altrincham, Lower Bebington, Northwich, Runcorn and in the Rural Districts of Runcorn and Northwich. In the small districts of Compstall, Handforth, Tarporley and Malpas no deaths from this disease are recorded.

The question of the prevention of this disease is discussed in the next section of this report.

Other Tubercular Diseases.

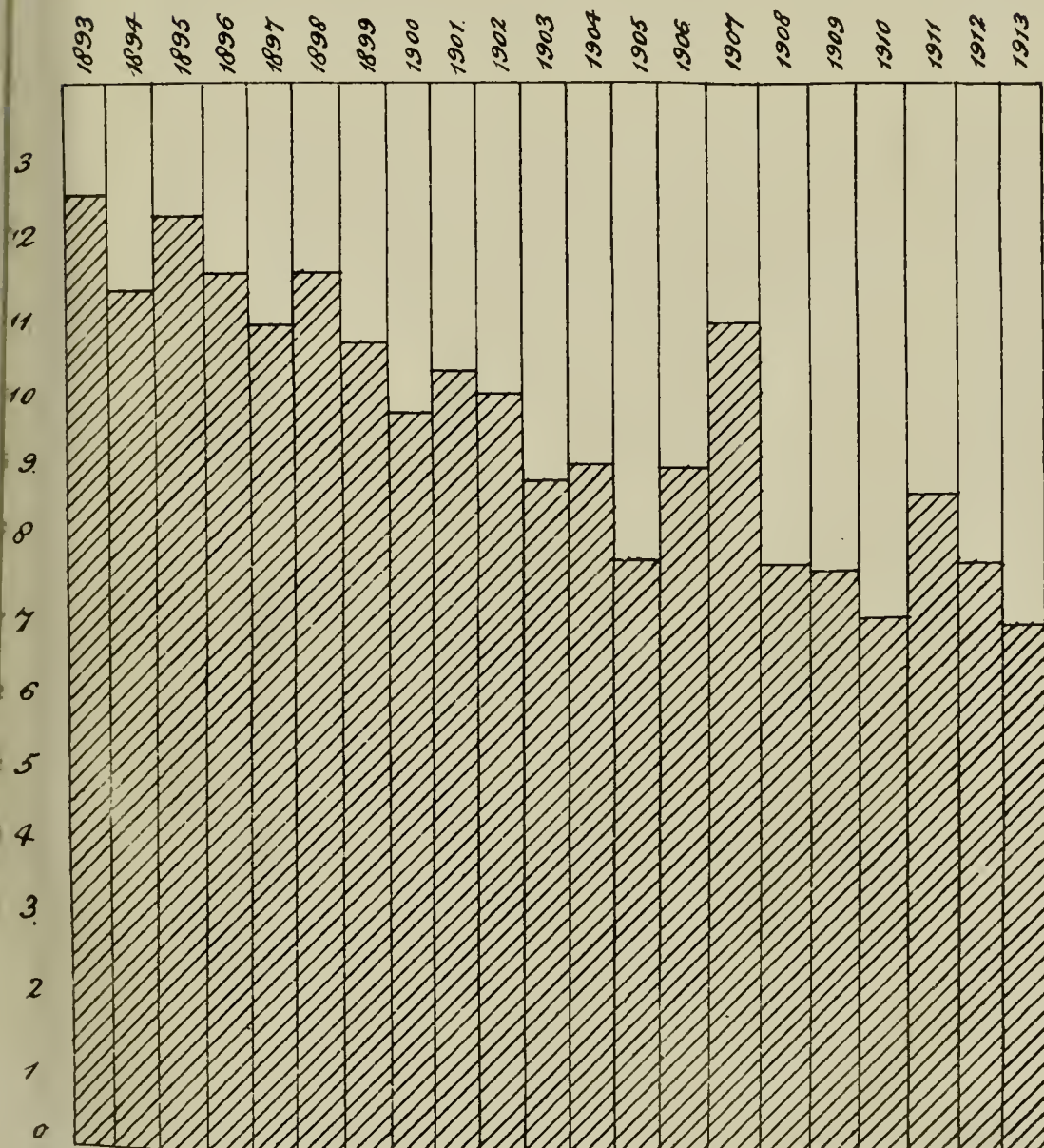
Included in this group we have tuberculosis affecting the lymphatic glands, bones, meninges or covering membrane of the brain, the peritoneum or lining membrane of the abdominal cavity and tuberculosis of general systemic distribution. Tuberculous meningitis is scheduled in a separate column and is responsible for 86 deaths out of this total. Excluding tuberculous meningitis, there were during 1913 137 deaths ascribed to one or other of the above-named diseases, a number equivalent to a death-rate of 0.22 per thousand persons living. This is a shade higher than the rate recorded for 1912, though it shews a distinct decrease on the figures for previous years, for in 1909 the rate was 0.42, in 1908 it was 0.47, in 1907 it was 0.46 and in 1906 it was 0.47.

Only a very few of the District Medical Officers of Health offer any comments on this group of diseases, which is one on which we have still a great deal to learn. Information is distinctly required as to the age of onset of these various conditions, the length of time during which they cause incapacity, their relative fatality and so on. For Education Authorities, Insurance Committees and those Councils who wish to carry out the treatment of children suffering from these conditions, all information of this character would be most valuable.

Deaths from this group of diseases appear to have been rather high in number in the Borough of Crewe, in the Urban Districts of Hazel Grove and Bramhall and Runcorn and in Runcorn Rural District.

Further remarks on this group of diseases appear in the next section of this report.

DEATH RATES FROM PHTHISIS (PULMONARY CONSUMPTION) 1893-1913. -



Cancer and Malignant Disease.

There were 622 deaths due to these various forms of disease during 1913—a number equal to 1.01 per thousand persons living.

The number of deaths varied from 184 in the six Municipal Boroughs to 258 in the 35 other Urban Districts and 180 in the 12 Rural Districts. Statistics for this County are only available as far back as 1900. It is not possible to give what is termed the corrected cancer death-rate, *i.e.*, the proportion of deaths from cancer to persons aged 35 years and upwards (in which class of person about 95 per cent. of the total deaths occur). The deaths are therefore perforce expressed as a rate per thousand of the total estimated populations. The figures are as follows:—

DEATHS PER 1,000 OF THE ESTIMATED POPULATION.

Year.	Cheshire.	England and Wales.
1900	0.70	0.829
1901	0.90	0.842
1902	0.74	0.844
1903	0.79	0.872
1904	0.79	0.877
1905	0.77	0.885
1906	0.85	0.917
1907	0.83	0.909
1908	0.84	0.923
1909	0.86	0.952
1910	0.84	0.967
1911	0.96	1.000
1912	0.92	—
1913	1.01	—

The death-rates in England and Wales from cancerous disease at all ages and in both sexes averaged 758 annually per million persons living in the decennium 1891-1900, thus exceeding by nearly 26 per cent. the average death-rate in the preceding decennium. From the year 1851 down to the present time cancer has shown a steady and persistent increase. During the 40 years 1851-1900 the cancer death-rate amongst males has trebled and amongst females it has doubled. A large amount of this increase is due to the more frequent detection of cancer as the result of operation or of post-mortem examination—in other words to the more favourable opportunities for correct diagnosis available in recent years.

Table shewing Death rate for malignant disease (Cancer, &c.)
per 1,000 of population.

MUNICIPAL BOROUGH—					
Congleton	...	...	...	...	1.06
Crewe	...	...	...	...	.9
Dukinfield	...	...	...	...	.6
Hyde	...	...	...	...	1.1
Macclesfield	...	...	...	...	1.1
Stalybridge	...	...	...	...	1.3
OTHER URBAN DISTRICTS—					
Alderley Edge	...	...	...	...	.6
Alsager	...	...	...	...	.7
Altrincham	...	...	...	...	1
Ashton-upon-Mersey	...	...	...	...	.5
Higher Bebington	...	...	...	...	1.1
Lower Bebington	...	...	...	...	.6
Bollington	...	...	...	...	.7
Bowdon	...	...	...	...	2.9
Bredbury & Romiley	...	...	...	...	1
Bromborough	...	...	...	...	.5
Buglawton	...	...	...	...	.7
Cheadle & Gatley	...	...	...	...	.9
Compstall	...	...	...	...	—
Ellesmere Port & Whitby	...	...	...	...	.4
Hale	...	...	...	...	1.2
Handforth	...	...	...	...	1
Hazel Grove & Bramhall	...	...	...	...	1.3
Hollingworth	...	...	...	...	.7
Hoole	...	...	...	...	.6
Hoylake & West Kirby	...	...	...	...	1.5
Knutsford	...	...	...	...	.1
Lymm	...	...	...	...	1.7
Marple	...	...	...	...	.7
Middlewich	...	...	...	...	.6
Mottram	...	...	...	...	.6
Nantwich	...	...	...	...	.9
Neston & Parkgate	...	...	...	...	1.9
Northwich	...	...	...	...	.6
Runcorn	...	...	...	...	.7
Sale	...	...	...	...	1.4
Sandbach	...	...	...	...	1.2
Tarporley	...	...	...	...	1.9
Wilmslow	...	...	...	...	1.8
Winsford	...	...	...	...	1.4
Yeardsley-cum-Whaley	...	...	...	...	1.2
RURAL DISTRICTS—					
Bucklow	...	...	...	...	.6
Chester	...	...	...	...	.4
Congleton	...	...	...	...	1
Disley	...	...	...	...	1
Macclesfield	...	...	...	...	1.3
Malpas	...	...	...	...	1.2
Nantwich	...	...	...	...	1.8
Northwich	...	...	...	...	.7
Runcorn	...	...	...	...	.6
Tarvin	...	...	...	...	.9
Tintwistle	...	...	...	...	.4
Wirral	...	...	...	...	.9

DEATH RATES FROM CANCER AND MALIGNANT DISEASE 1903-1913.



CANCER AND MALIGNANT DISEASE.

The Registrar-General recommends that under the heading of cancer Medical Officers of Health should enter deaths from carcinoma, scirrhus, endothelioma, epithelioma, perithelioma, rodent ulcer, sarcoma, cancer, malignant disease, &c. and these should be further classified or assigned to *the part primarily affected*, or, if two or more organs are mentioned without the duration being given, to the one first stated.

Many Medical Officers of Health have commenced a systematic classification of the organs affected and it should be no difficult matter for all such officers to classify these deaths, *e.g.*, as due to cancer (1) of the buccal cavity, (2) stomach, liver, &c., (3) peritoneum, intestines and rectum, (4) female genital organs, (5) mammae, (6) skin, (7) various other organs, such as glands, kidney, larynx, pancreas, spleen, &c. and group separately such things as disseminated cancer, general carcinomatosis and sarcomatosis, multiple cancer, &c.

The death-rates from cancerous disease in the several districts in the County during 1913 shew considerable variation. The highest rate is that in Bowdon U.D., where it was 2.9 per 1,000 of the population. Other high rates were recorded in the following districts:—

Neston and Parkgate U.D.	...	1.9
Tarporley U.D.	...	1.9
Wilmslow U.D.	...	1.8
Nantwich R.D.	...	1.8
Lymm U.D.	...	1.7
Hoylake and West Kirby U.D.	...	1.5
Winsford U.D.	...	1.4
Stalybridge M.B.	...	1.3
Hazel Grove and Bramhall U.D.	...	1.3
Macelesfield R.D.	...	1.3
Sandbach U.D.	...	1.2
Yeardsley-cum-Whaley U.D.	...	1.2
Malpas R.D.	...	1.2
Hale U.D.	...	1.2
Hyde M.B.	...	1.1
Macelesfield M.B.	...	1.1
Higher Bebington U.D.	...	1.1

Amongst males cancer of the stomach is the most rapidly increasing form of this disease and a similar remark applies to cancer of the rectum or lower bowel. In the case of women, deaths from cancer of the breast have increased by about 2.9 per cent. during the last 16 or 17 years in spite of the fact that improved methods of operation have saved numbers of lives.

CANCER AND MALIGNANT DISEASE.

Amongst the districts where cancer deaths appear to have been rather high are the following:—The Municipal Boroughs of Crewe, Hyde and Stalybridge, the Urban Districts of Altrincham, Hazel Grove and Braimhall, Hoyle and West Kirby, Runcorn, Wilmslow and Winsford and the Rural Districts of Nantwich and Macclesfield. This may and probably does depend to a large extent on the age-distribution of the population, persons 35 years of age and upwards being specially liable to attack by malignant disease.

Theories as to causation continue to be propounded, but none has yet been found which can serve as a useful working basis for preventive measures. I am convinced more than ever that the education of the public to take notice of pre-cancerous conditions is, under present conditions, the only sound line of attack. I repeat from my last year's report that the two things we have to drive home to the minds of the public are:—

1. The proved possibility of cure when the disease is recognised at such an early stage as to be capable of radical removal.
2. The terrible danger of waiting until even slightly marked discomfort or interference with bodily function has manifested itself.

The day is not far off when cancerous diseases will be made compulsorily notifiable and public health authorities will be afforded a chance of investigating the conditions accompanying them at an earlier date than they are able to at present.

CREWE MUNICIPAL BOROUGH.—“From this cause 44 deaths were registered. The average annual number of deaths since 1899 has been 32 and the yearly death-rate as follows:—

Years	1902	1903	1904	1905	1906	1907	1908	1909	1910	1911	1912	1913
Death-rate	0.82	0.56	0.58	0.67	0.64	0.91	0.70	0.92	0.82	0.84	0.97	0.96

The sex distribution was:—Males 26, Females 18.

The age distribution was:—

Years	...	25-45	45-65	65 and upwards.
Deaths	...	1	24	19

The parts of the body affected were:—Buccal cavity three, stomach, liver, etc. 26, peritoneum, intestines two, female genital organs five, breast three, other organs five. The death-rate from cancer is steadily increasing in various parts of the country. The earlier patients who suffer from this disease seek surgical treatment, the greater is the prospect of eradicating the same and prolonging life.”

CANCER AND MALIGNANT DISEASE.

DUKINFIELD MUNICIPAL BOROUGH.—“Cancer accounted for 12 deaths, compared with 13 in 1912, 18 in 1911, 17 in 1910, eight in 1909, 17 in 1908, 10 in 1907, five in 1906, five in 1905, 10 in 1904, 16 in 1903, 11 in 1902, 10 in 1901 and 10 in 1900. This disease, generally affecting people over 30 years of age, has caused an increased number of deaths of recent years, the explanation of which is not very satisfactory. Certain soils seem to favour production of this disease and some think that it is associated with a micro-organism.”

STALYBRIDGE MUNICIPAL BOROUGH.—“The mortality from cancer (including ‘malignant disease’) continues heavy, 36 deaths having resulted from this disease during the year, the numbers for previous years being :—

1912	1911	1910	1909	1908	1907	1906	1905	1904	1903
26	24	22	28	21	22	28	23	20	19

Examining the cases in the borough during the year I find the deaths distributed thus :—

Wards—Millbrook.		Laneashire.		Dukinfield.		Staley.				
Population		2,956		5,767		7,462		10,669		
No. of deaths } from Cancer }		2		12		7		15		
Ages at death } from Cancer }		35-40	40-45	45-50	50-55	55-60	60-65	65-70	70-75	over 75 years.
		1	3	2	3	8	8	4	4	3
Seat of } disease }		Digestive Tract.		Liver.		Breast.		Uterus.		Other parts
		13		4		2		8		or Organs 9

As regards sex, 12 of the deaths were of males and 24 were of females.”

HIGHER BEBINGTON URBAN DISTRICT :—“There were two deaths from cancer in 1913 and the same number in 1912. As the questions of whether cancer is on the increase or not and whether it is more prevalent in the female sex or not are under constant discussion, the following note may be of interest.

The last published annual report of the Registrar General is that for the year 1911. From this it can be ascertained that the mortality for England and Wales among males from cancer was 891 per million living and among females 1,088 per million living. ‘In the case of each sex these rates are the highest on record.’ The mortality in 1911 was greater in the male sex in childhood and from 60 to 80 years of age, but in the female sex at other ages. The Registrar General discusses the question of a real increase of cancer and assumes that the inequality of incidence in

CANCER AND MALIGNANT DISEASE.

the two sexes is accounted for by relative difficulty of diagnosis in the male and that in regard to certification London is in advance of other districts and the statistics of London show no such excess of female deaths over male. He writes 'if then these assumed differences of accuracy in diagnosis can by themselves account for the differences in incidence of cancer mortality recorded in town and country may they not suffice to account also for the increase in recorded cancer mortality?'

LOWER BEBINGTON URBAN DISTRICT.—“It will be seen that there were eight deaths from cancer compared with seven in 1912 and nine in 1911.

Malignant disease (1913) Lower Bebington:—

Sites.	Male.	Female.	Total.
Jaw ...	2		2
Stomach...	1	1	2
Bowel ...		1	1
Liver ...		1	1
Uterus ...		2	2
	3	5	8

HOYLAKES AND WEST KIRBY URBAN DISTRICT:—“Cancer accounted for 23 deaths in 1913, 13 in 1912 and 16 in 1911. The sites of the growth and sexes of the affected persons are given in the following list:—

Malignant disease, 1913—Hoylake and West Kirby.

Breast ...	3
Skin ...	1
Bone ...	1
Spinal Cord	1
Tongue ...	1
Bowel ...	9
Stomach ...	3
Thyroid ...	1
Bladder ...	1
Uterus ...	2
	—
	23
	—

NESTON AND PARKGATE URBAN DISTRICT:—“It will be seen that nine deaths took place from cancer. The site of the malignant growth and the sex of the patient are indicated in the subjoined table.

CANCER AND MALIGNANT DISEASE—ALCOHOLISM AND CIRRHOSIS
OF THE LIVER—DISEASES AND ACCIDENTS OF PARTURITION.

Cancer (1913).

Site.	Males.	Females.	Total.
Liver ...	2	2	4
Bowel ...	2	1	3
Breast ...	0	1	1
Uterus ...	0	1	1
Total	4	5	9

In 1911, three, viz., two males and one female died from cancer and in 1912 six, viz., two males and four females."

NANTWICH RURAL DISTRICT :—"Forty-seven deaths were ascribed to cancer and malignant disease. Thus 14.4 per cent. of the total deaths were caused by this terrible scourge and 19.1 per cent. of the deaths at over twenty-five years of age. It is my duty again to urge the enormous importance of seeking medical advice at the earliest possible moment in all cases of new growth or ulceration. Surgical operation is the only method of treatment which up to the present offers any chance of radical cure and it is only in early cases that cure can be effected. It is only too commonly the case that people put off the seeking of advice until a time when pain compels them to seek it and then it is frequently too late to do any operation radical enough to effect a cure."

Alcoholism and Cirrhosis of the Liver.

There are 107 deaths ascribed to these causes of death, namely :—33 in the six Municipal Boroughs, 41 in the 35 other Urban Districts and 33 in the 12 Rural Districts. As remarked in previous Reports, however, this is no criterion of the effects of alcoholism, for in the first place the true cause of death is frequently not put on record and, secondly, alcohol taken immoderately exerts an effect on practically every organ of the human body, inducing or hastening death from many other causes than cirrhosis of the liver, besides rendering the alcoholic subject in particular much more prone to take infectious diseases and to develop diseases of the type known as arterio-sclerosis.

Diseases and Accidents of Parturition.

The deaths from this group of diseases amounted to 56 during 1913, a decrease of seven on the number recorded for the previous year. As previously remarked, one has here to consider not only the deaths but the number of women incapacitated for home and other duties by illness which in many cases might

DISEASES AND ACCIDENTS OF PARTURITION—VENEREAL DISEASES

have been avoided by proper medical and hygienic treatment during pregnancy and confinement. In other words many a woman is rendered what has been termed a "gynæcological cripple" by the want of careful attendance at the time of childbirth.

Venereal Diseases.

There is no comment of any note in any of the Annual Reports on the diseases included under this heading. The bald fact is recorded that a certain number of deaths have been due to syphilis, but just as in the case of alcoholism this record is very wide of the mark. In certain evidence given before the Royal Commission now sitting to discuss this question the number of cases of syphilis in the United Kingdom at the present day is estimated at 3,000,000. It has been stated that about 800,000 fresh cases of venereal disease occur annually in the United Kingdom, *i.e.*, about 114,000 of syphilis and 686,000 cases of gonorrhœa.

There is no doubt that venereal disease and ignorance of sex hygiene walk arm-in-arm; if by proper means education of adolescents on this matter could be attained the prevalence of these horrible pests would be much reduced. If added to this there were, as there no doubt will be shortly, better facilities for diagnosis and better means for early treatment the amount of sickness and mortality would considerably shrink.

The medical profession has been accused of a conspiracy of silence in connection with the subject of venereal diseases and this with a considerable show of truth. The subject is an unsavoury one at any time and there are still many minds incapable of looking at it from the broad outlook of the public health. There are still many people whose innate modesty compels them to shrink from any discussion of it. Whatever one's views may be of the question of women suffrage the organisation which aims at securing such suffrage is deserving of the highest admiration for the pluck and moral courage it has shown by making this question a plank in its platform. The extent of the irreparable damage wrought on women by syphilis and gonorrhœa (and particularly by the latter) is by no means sufficiently well known even in the general medical world, though it is, of course, to specialists. Dr. Prince Morrow has announced that "in view of its extensive prevalence, its conservation of virulence after apparent cure and its tendency to invade the uterus and annexial organs with results often dangerous to life and destructive to the reproductive capacity of the woman, gonorrhœa overshadows syphilis in importance as a social peril." The causative organism of

VENEREAL DISEASES—PUERPERAL FEVER.

gonorrhœa does not limit its devastations to the part primarily affected, but can become a systemic disease invading secondarily almost every organ of the body.

In the case of women the infection of adjoining parts and organs is exceedingly common. The organism has been found so far away from its primary site as the brain, spinal cord, endocardium (internal lining of the heart), pleura (internal lining of the chest cavity) and in the liver. Gonorrhœal rheumatism has, of course, been known for many years.

There are reasons to suppose that this disease is much more subtle than has hitherto been credited and that not only may the condition remain latent or quiescent for many years after apparent cure, but that also during this quiescent period it may under certain circumstances become capable of transmission to others. Dr. Palmer Findley is of opinion that individuals may transmit gonorrhœal infection though shewing no clinical signs of the disease and being apparently themselves immune to infection.

That syphilis is a potent direct or indirect cause of many forms of insanity, epilepsy, idiocy, arterio-sclerosis, Bright's disease, diabetes, cancer and tuberculosis is well recognised. That it is a disease of absolutely indefinite duration and of the most intermittent and irregular manifestations is also now recognised.

The time is by no means far distant when public health authorities will be charged with the carrying out of some measures for the control of venereal diseases. Probably the first duty cast upon them will be the provision of facilities for the earlier diagnosis of these diseases. The time is quite ripe enough for that measure to be carried out now. The confidence of the attending practitioner need not be infringed nor need the infected be exposed to the fear of publicity—a matter of grave concern to all, but of absolute horror to the innocently infected. Following this there must be an increase of facilities for treatment under conditions which will not involve any risk of suspicion attaching to those who attend, which will not interfere with their daily work and which will ensure proper continuance of treatment. Education will, of course, form an integral part of treatment. Finally there must be a prohibition of quack practice and quack advertisement strongly enforced under adequate penalties. Beyond this it would be unreasonable to go now. But so far surely we have the best reasons for going at the present moment.

Puerperal Fever.

The deaths from this disease numbered 20 during the year in the Administrative County, the number of cases of the disease

APPENDICITIS AND ALLIED DISEASES—
VIOLENT DEATHS AND SUICIDES.

notified to District Medical Officers of Health being 24 during the same period. The fatality rate is thus seen to have been a distinctly high one, namely, 83 per cent. Further allusion is made to this subject in the section dealing with the Midwives Act.

Appendicitis and Allied Diseases.

There have been 48 deaths ascribed to this group of diseases.

Comparisons with the records of previous years are not possible as the classification of causes of deaths were only altered last year and this group of diseases does not appear in records prior to 1911.

Violent Deaths and Suicides.

These have numbered 329, viz. :—276 deaths by violence and 53 suicides.

Section IV.—Infectious Diseases.

Table III. at the end of this Report shows the number and nature of the cases of infectious disease notified in the Administrative County during 1913 and the numbers of such cases removed to Isolation Hospitals for treatment.

There were 4,517 cases of infectious disease notified to the several Sanitary Authorities in Cheshire during 1913. The nature of the notified cases is shewn in the following statement:—

	Boroughs.	Urban Districts.	Rural Districts.	Total.
Smallpox ... ..	...	...	1	1
Scarlet fever	638	418	402	1458
Diphtheria	230	524	209	963
Enteric (Typhoid) Fever ...	79	62	13	154
Erysipelas	144	137	51	332
Cerebro-spinal Meningitis...	...	1	1	2
Epidemic Poliomyelitis ...	1	12	4	17
Pulmonary Tuberculosis ...	264	392	214	870
Other forms of Tuberculosis	203	349	144	696
Puerperal Fever ..	10	11	3	24

So far as individual districts are concerned I append a new Table shewing the rate of notification of various diseases per thousand of the estimated population which gives a much more exact view of the degree of prevalence of these diseases than any mere numerical statement could afford. In this Table certain things are quite clearly shewn.

Table shewing notification rates per 1,000 of population
(estimated 1913) in different districts in County.

	Scarlet Fever.	Diph- theria.	Typhoid	Tuber- culosis all forms	Ery- sipelas.	Puer- peral Fever.
MUNICIPAL BOROUGHs—						
Congleton ...	1·68	·70	·26	3·53	·88	·17
Crewe ...	1·79	3·43	·06	2·56	·48	·06
Dukinfield ...	5·25	·3	·65	2·75	·65	·05
Hyde ...	2·80	·94	·53	1·09	1·88	·08
Macclesfield ...	8·54	·66	·89	3·87	·6	—
Stalybridge ...	1·53	·15	·37	3·13	·52	·03
OTHER URBAN DISTRICTS—						
Alderley Edge ...	1·57	·94	—	1·88	1·25	·31
Alsager ...	·72	—	—	3·64	—	—
Altrincham ...	2·10	·33	·27	2·76	·33	·11
Ashton-upon-Mersey ...	·64	—	·13	3·35	·51	—
Higher Bebington ...	1·73	3·48	—	1·16	1·73	—
Lower Bebington ...	3·21	4·62	—	3·71	·82	·08
Bollington ...	·19	·57	·19	·38	—	—
Bowdon ...	1·31	·32	2·95	2·29	·32	—
Bredbury and Romiley ...	2·42	2·31	·33	1·65	·88	—
Bromborough ...	6·02	3·51	—	2·0	1·	—
Buglawton ...	—	—	—	3·47	—	—
Cheadle and Gatley ...	2·26	·81	·45	2·17	·27	—
Compstall ...	3·29	1·09	2·19	—	2·19	—
Ellesmere Port and Whitby ...	4·56	3·63	—	3·46	·67	—
Hale ...	1·51	1·29	·86	1·72	—	—
Handforth ...	—	—	—	3·20	—	—
Hazel Grove and Bramhall ...	1·89	·28	·19	2·56	·37	—
Hollingworth ...	·38	·77	—	·77	—	—
Hoole ...	1·51	1·34	—	3·01	1·17	·16
Hoylake and West Kirby ...	2·64	·74	·13	3·11	·40	—
Knutsford ...	·17	·68	·17	3·08	·34	·17
Lymm ...	1·58	6·72	—	1·78	·99	·19
Marple ...	1·07	·61	—	—	·61	—
Middlewich ...	·81	1·21	·40	2·42	·20	—
Mottram ...	—	—	—	1·96	—	—
Nantwich ...	·25	·76	—	2·80	·38	—
Neston and Parkgate ...	·21	1·27	—	8·29	—	—
Northwich ...	1·23	2·3	·53	1·93	·32	·05
Runcorn ...	·66	5·66	·27	8·88	·66	—
Sale ...	1·08	·19	·06	2·61	·82	—
Sandbach ...	1·74	·69	—	1·04	·35	—
Tarporley ...	2·31	—	—	·77	—	—
Wilmslow ...	1·68	—	·12	1·92	·24	·12
Winsford ...	1·47	11·06	·36	1·75	1·75	·18
Yeardsley-cum-Whaley ...	·59	—	—	2·36	—	—
RURAL DISTRICTS—						
Bucklow ...	2·84	·68	·08	1·83	·25	—
Chester ..	·70	·93	·08	2·34	·08	—
Congleton ...	4·59	1·32	·15	2·10	·23	—
Disley ...	—	·33	·33	3·68	·33	·33
Macclesfield ...	2·67	1·54	—	·83	·06	·12
Malpas ...	3·63	·21	·21	·42	—	—
Nantwich ...	1·14	·59	·04	1·58	·43	—
Northwich ...	1·60	1·51	·04	1·22	·25	—
Runcorn ...	2·1	1·76	·1	3·21	·51	—
Tarvin ...	1·72	1·35	—	·67	·07	—
Tintwistle ...	·45	1·36	—	1·36	—	—
Wirral ...	2·61	·64	·04	2·76	·29	—
ADMINISTRATIVE COUNTY ...	2·37	1·57	·24	2·55	·54	·03

INFECTIOUS DISEASES.

Scarlet Fever has been severely prevalent in the Boroughs of Macclesfield and Dukinfield where the notification rates for this disease are 8.54 and 5.25 per thousand respectively. Other districts which have suffered severely from scarlet fever are Bromborough Urban District (6.02), Ellesmere Port and Whitby Urban District (4.56), Congleton Rural District (4.59), Bebington Urban District (3.21), Compstall Urban District (3.29) and Malpas Rural District (3.63).

Diphtheria prevailed to a most serious extent in Winsford Urban District where the notification rate was actually 11.06 per thousand (which means that more than one person out of every hundred had this disease during 1913). Other districts which suffered severely from diphtheria were Lymm Urban District (6.72), Runcorn Urban District (5.66), Lower Bebington Urban District (4.62), Ellesmere Port and Whitby Urban District (3.63), Bromborough Urban District (3.51), Higher Bebington Urban District (3.48) and the Borough of Crewe (3.43).

Typhoid Fever was only seriously prevalent in a few districts. In Bowdon Urban District the rate was 2.95 per thousand and in Compstall Urban District 2.19. The rate for all the other districts was under 1 per thousand.

As regards *Tuberculosis (all forms)* Runcorn Urban District holds the record with the very high rate of 8.88 per thousand and is followed closely by Neston and Parkgate Urban District with a rate of 8.29: these rates are more than twice as high as the next highest rate anywhere in the County. The next highest rates are shewn to be in the following districts:—

Macclesfield M.B.	...	...	3.87
Lower Bebington U.D.	...	...	3.71
Disley R.D.	...	...	3.68
Alsager U.D.	...	...	3.64
Congleton M.B.	...	...	3.53
Buglawton U.D.	...	...	3.47
Ellesmere Port and Whitby U.D.	...	...	3.46
Ashton-on-Mersey U.D.	...	...	3.35
Runcorn R.D.	...	..	3.21
Handforth U.D.	...	...	3.20
Stalybridge M.B.	...	...	3.13
Hoyle and West Kirby U.D.	...	...	3.11
Knutsford U.D.	...	...	3.08
Hoole U.D.	...	...	3.01

The lowest rates under this heading during 1913 are:—

Bollington U.D.	...	...	0.38
Tarvin R.D.	...	...	0.67
Hollingworth U.D.	...	...	0.77
Tarporley U.D.	..	...	0.77
Macclesfield R.D.	...	...	0.83

In some of the smaller districts, however, the figures are far too small to permit of a reliable calculation and we must wait until at least a five years' complete record can be obtained before judgment can be pronounced.

How we have grown in our ideas of methods of preventing infectious disease may be judged by a perusal of the following accounts taken from books published in the sixteenth and seventeenth centuries. In another century preventive measures will probably have been fined down to the wholesale administration of prophylactic sera and vaccines and the destruction of intermediate insect pests.

The following extract from *Loimographia* by William Boghurst, Apothecary, published in the year 1665 (the year of the Great Plague of London), contains much that is quaint and interesting on this matter:—

Speaking "of Prophylacticks or Preservative Means," Mr. Boghurst says:—

"I think by right of naturall order these ought to bee ranked before the means and method of cure, for if wee can but reach to the first there will be no need of the second; if we can by any means keep ourselves from the disease, we shall have little need of cure."

These words are just as true to-day as they were two hundred and fifty years ago and they might well be taken as the motto of all Public Health Departments. Mr. Boghurst is apparently of the same opinion as most modern Medical Officers of Health, viz., that fumigation is not of any appreciable benefit in the prevention of the spread of infection: his final sentence that it 'towards preservation lends but a weak hand' is really an up-to-date scientific pronouncement.

Speaking of "Preservatives and Means for those who stay behind," Mr. Boghurst says:—

"Therefore first, concerning aire, little can bee done concerning this because all that wee can do will work but little alteration in it, the effect of all that bee done, being

soe flitting and transitory. Yet a great bustle hath beene made among Authors and the people, about correcting the aire (as well as correcting of medicines which comes to as little also). I have not spent two farthings this yeare about correcting the aire in my house, yet I think I had as wholesome aire blowing in my house as my neighbours, many of which filled their houses every day with smoke to fumigate and correct the aire, yet I had noe body sick or dyed in my house all this yeare nor in my life. But because some people have great conceits about correcting the aire, I will set down all the devises I can think of which may do any good. As in winter tyme and in foggy and moyst places and tymes, especially nights and mornings, to keepe good fires if you bee able (though it bee in the summer, nights and mornings will doe good). Wood fires are accounted best, and if you be more choice about the quality of your wood, you may choose Juniper wood, Ash Tree, Oak, Guaiacum, Lignum, Aloes, etc., Yet I know noe reason why Sea coale fires also should be discontinued, seeing they commend the burning of brimstone soe much. The next, to bee sure to keep the house from anything which may occasionally infect the aire, as nastyness in generall, foul water, dust, cobwebbs, or anything rotten or mouldy, as Herbs, Rootes, Victualls; to rub houses with Angelica, Rue, Scordium, Wormewood, Southernewood, Costmary. Walnut leaves, bay leaves, Lavender, Cotton and many other are counted very wholesome, or to boyle these or the like in a kettle of water, and wash the house with it hot. As little can I think that the soldiers discharging the guns ever quelled it in any places as some Authors have written, also oft sprinkling houses, viz., the floors and the walls with Aromatick Decoctions, Waters, Vinegars, strewing Windows, Rooms and Chymnies with Sweet Harbs and Flowers, burning or fuming vinegar and rose water. Some think it fit to keep birds in cages to fan the aire with their fluttering wings to keep it from stagnation and putrefying, but I thinke this is but a trifle. Now for fuming and smoke-drying houses, this being generally practized, and for those sakes that believe in it, I will set down all simples which are good and will conveniently and handsomely burn; what woods are good I have set down already.

“Burn rather Pitch, Resin, Turpentine, Asafoetida, Asadulcis, etc. Besides these things oft flashing of gunpowder is much in esteem with some, and wildfire squibbs, fire balls and other, serpents, crackers and gymnacks which are commonly used on the 5th of November.

Besides these, burning old Shoes, Leather and Hornes are in use with some poor folk, also the smell of a Fox or Goat is thought good by some, but that which was chiefly in vogue (and for universality of use) was smoking of Tobacco, of which I have spoken before. And thus much for correcting the aire which I think towards preservation lends but a weak hand."

The following extract from a book entitled "The Doctor," by William Andrews, F.R.H.S., is an interesting instance of mediæval preventive measures:—

"The nature of the regulations devised in the Tudor times to ward off infection may be gathered from the rules laid down at Chester in November, 1574, when:—

"the right Worshipful Sir John Sauage, Knight, maior of the City of Chester had consideracion of the present state of the said cite somewhat visited with what is called the plage, and devisinge the best meanes and orderlie waies he can, with (the advice) of his Bretheren the alderman, Justices of peace within the cite aforesaid (through the goodness of God) to avoid the same hath with such advice, sett forth ordained and appointed (amongst other) the points, articles, clauses, and orders following, which he willeth and comandeth all persons to observe and kepe, upon the severall pains theirin containyd:

"Imprimis. That no person nor persons who are or shall be visited with the said sickness, or any other who shall be of there company, shall go abroad out of there houses without license of the alderman of the ward such persons inhabite, And that every person soe licensed to beare openlie in their hands . . . three quarters long . . . ense . . . shall goe abroad out of the . . . upon paine that eny person doynge the contrary to be furthwith expulsed out of the said cite.

"2. Item if any person doe company with any persons visited, they alsoe to beare . . . upon like payne.

"3. Item that none of them soe visited doe goe abroad in any part or place within the cite in the night season, upon like payne.

"4. Item that the accustomed due watche to be kepte every night, within the said cite, by the inhabitants thereof.

"5. Item the same watchman to apprehend and take up all night walkers and such suspect as shalbe founde within

INFECTIOUS DISEASES.

and to bring them to the Justice of peace, of that . . . the gaile of the Northgate, that further order may be taken with them as shall appear . . .

“6. Item that no swine be kept, within the said citie nor any other place, then . . . side prively nor openlie after the xiiith. daie of this present moneth, upon paine of fyne and imprisonment of every person doing the contrary.

“7. Item that no donge, muck or filth, at any tyme, hereafter be caste within the walls of the said citie, upon paine of ffyne and imprisonment at his worships direction.

“8. Item that no kind or sort of . . . or any wares from other place be brought in packs into the said citie of Chester, untill the same be ffirste opened and eired without the libities of the said citie, upon pain last recited.

“9. Item that papers or writing containing this sence Lord haue mercie upon us, to be fixed upon euery house, dore post, or other open place, to the street of the house so infected.

“10. Item that no person of the said citie doe suffer any their doggs to goe abrode out of their houses or dwellings, upon paine that euery such dogge so founde abrode shalbe presently killed. And the owners thereof ponished at his worships pleasure.”

“It has always been found easier to make laws than to have them enforced, and we find certain inhabitants complaining of the disobedience of infected persons in the following petition:—

“To the right worshipful Sir John Savage, knight, maior of the Citie of Chester, the aldermen, sheriffs, and common counsaile of the same.

“In most humble wise complayninge sheweth unto your worships, your Orators, the persons whose name are subscribed inhabiting in a certain lane within the same citie called Pepper Street, That where yt haue pleased God to infect divers persons of the same Street with the plage, and where also for the avoidinge of further infection your worships have taken order that all such so infected should observe certaine good necessarye orders by your worships made and provided. But so it is, right worships, that none of the said persons infected do observe any of the orders by your worships in that case taken, to the greate danger and perill, not only of your Orators and their famelyes being in

number twenty, but also of the reste of the said citie, who by the sufferance of God and of his graecious goodness are clere and safe from any infeetion of the said deceas: In consideration whereof your Orators moste humbly beseche your worships for God's sake, and as your worships intend it your Orators should, by the sufferance of God, avoide the dangers of the said deceas with their family, and also for the better safty of the citie to take such directions with the said infected persons that they may clearly be avoided from thens to some other convenient for the time untill God shall restore them to their former health. And in this doing your Orators shall daily pray, &c."

Small-pox.

There was only one ease notified in the Tarvin Rural District and the evidence was fairly clear that this was an important ease. The sufferer was removed to Chester Isolation Hospital, contacts diligently searched out and re-vaccinated and that was the end of the matter.

TARVIN RURAL DISTRICT:—"The ease of smallpox was a male about 36 years old, a farmer. He developed the disease on June 6th, 1913, which was the date of notification. The date of onset of illness was about the 1st of June, as he was ailing on that date. He was removed to the Isolation Hospital about mid-day on June 7th. Immediately before his removal two contacts in the house were vaccinated, also myself. Immediately after his removal the house was disinfected and the bedding burnt, the house was cleaned down thoroughly and fumigated. All other known contacts were vaccinated on the morning of June 8th, the sanitary inspector and all living in his house and all living in my house were also vaccinated. The man had no idea where he contracted the disease; he was away at a show about 14 days previous to onset of illness."

NESTON AND PARKGATE URBAN DISTRICT.—"No smallpox occurred in the district, but notification was received from Port Sanitary Authorities of six contacts who had proceeded to their homes in Neston. Three of these persons submitted to vaccination and the other three had recently undergone the operation. The following table gives the number of conscientious objections to vaccination in the years 1909-1912 inclusive, in the Neston Urban Area and in the Neston Registration District, which includes Neston Urban:—

	1909.	1910.	1911.	1912.	1913.
Neston Urban	4	6	2	6	11
Neston Registration District	7	12	8	13	13

Vaccination.

Only a few Medical Officers' of Health furnish information under this heading, but from the evidence thus afforded it is clear that the population is being deluded into a state of false security and when the necessary seed is sown the crop of cases and deaths will be a very serious one. Only those who have actually faced smallpox know its terrible dangers and can speak with any sense of responsibility on the question of vaccination. The world is full of long-tongued theorists whose words and writings on this matter in the absence of actual experience of outbreaks is the emptiest possible vapouring. I give the few extracts with which I have been supplied by the several District Medical Officers of Health.

CREWE MUNICIPAL BOROUGH.—The Medical Officer of Health for Crewe provides the following information :—

YEAR.			1911	1912	1913
Births registered	...	...	1028	1012	1009
Died unvaccinated	...	...	116	44	62
No. surviving	Total		912	968	947
Successfully vaccinated	...	...	538	553	492
Percentage successfully vaccinated			59	57	49
Certificates of insusceptibility	...		1	...	...
Certificates of exemption (Conscience Clause)	...	...	307	333	363
Percentage			33	34	38
Postponed by medical certificate	...		14	29	18
Removal to other districts	...		30	23	51
In abeyance	...	...	22	30	23

“These statistics record that the number of children exempted under the conscience clause of the Vaccination Act, 1907, still increases. From 9 per cent. in 1907 the exemption certificates have grown to 38 per cent. in 1913. One must emphasise the danger created by this, as it is only by means of recent efficient vaccination that the community can hope to continue to be free from this disease.”

DUKINFIELD MUNICIPAL BOROUGH.—The Medical Officer of Health submits the following returns of births, successful vaccinations, insusceptible of vaccination, dead unvaccinated, postponements, removal from district, certificate of exemption, &c., from 1st January, 1913, to 31st December, 1913, in the Municipal Borough of Dukinfield :—

VACCINATION—ERYSIPELAS—DIPHThERIA.

Number of births	...	517	
Successful vaccinations	...	...	30
Insusceptible of vaccination	...	...	0
Dead unvaccinated	...	...	38
Postponements by medical certificates	...	...	1
Removed from district	...	...	0
Conscientious objections	..	...	253
Illegitimate births	...	...	16
Births unaccounted for	...	...	195

Erysipelas.

There were 332 cases of this disease notified in the Administrative County during 1913. In hardly any single case is the subject deemed worthy of comment. This disease is highly infectious and the greatest care should be taken in particular to avoid the slightest possibility of its transference to women in the puerperal state and of course to all surgical cases.

Diphtheria.

There were 963 cases of this disease (under which I have included membranous croup) notified during 1913 in the Administrative County. The districts which suffered most severely were the following:—

Crewe M.B.	...	...	157 cases
Winsford U.D.	...	..	120 „
Runcorn U.D.	...	...	102 „
Lower Bebington U.D.	...	...	56 „
Runcorn R.D.	...	...	51 „
Ellesmere Port and Whitby U.D....	...	...	43 „
Northwich U.D.	...	...	43 „
„ R.D.	...	...	36 „
Lymm U.D.	...	...	34 „

The following are the remarks of the District Medical Officers of Health on this subject:—

CREWE MUNICIPAL BOROUGH.—“The cases notified numbered 157 and the deaths nine, giving a case mortality of 5.7. The cases removed to hospital numbered 137. The cases and deaths in previous years since 1909 when epidemic prevalence commenced are as under:—

		1909.	1910.	1911.	1912.
Cases	...	121	290	86	93
Deaths	...	7	32	5	8
Case mortality %	...	5.7	11.0	5.8	8.6

DIPHTHERIA.

"The number of cases notified was 64 more than in 1912 and 73 more than the average yearly number reported since notification began. The monthly incidence of the disease was high in the last six months of the year. The age distribution of the cases and deaths was as follows:—

Age.	No. of Cases.	No. of Deaths.	Case Mortality.
Under 5 years ...	32	2	6.2
5-15 " ...	104	7	6.7
15-25 " ...	13	0	—
25-45 " ...	7	0	—
45-65 " ...	1	0	—

"The sex distribution was 65 males, 92 females. 132 families were affected:—

116 families had 1 case each.

11	"	"	2 cases	"
2	"	"	3	"
2	"	"	4	"
1	"	"	5	"

"The case mortality was one of the lowest recorded and was 4.9 per cent. lower than the average case mortality of the previous 10 years. Early treatment of the disease with large doses of anti-diphtheritic serum and careful nursing have much to do with this good result. The earlier these cases are seen and admitted to hospital the greater the patients' prospects of recovery. During the year the nose and throat swabs examined numbered 759. So far as time permits swabs are dealt with in the Municipal Laboratory and the remainder are sent to the Public Health Laboratory of Manchester University.

"The numbers and results in each case were:—

		No. Examined.	Result.	
			Positive.	Negative.
Municipal Laboratory	...	380	85	295
Manchester University	...	379	30	349
		<hr/> 759	<hr/> 115	<hr/> 644

"The swabs examined in the Municipal Laboratory have been classified under throat and nose as follows:—

	No.	THROAT.		No.	NOSE.	
		Pos- itive.	Neg- ative.		Pos- itive.	Neg- ative.
Swabs from Hospital Cases ...	144	44	100	92	23	69
Swabs from suspected or actual cases at home ...	68	12	56	1	—	1
Swabs from home contacts ...	50	4	46	10	2	8
Swabs from school contacts ...	15	—	15	—	—	—
	<hr/> 277	<hr/> 60	<hr/> 217	<hr/> 103	<hr/> 25	<hr/> 78

"From returns prepared by the Local Government Board it is now possible to compare the local sickness rate from diphtheria with the rates in other parts of the country since 1911.

"The local rate was higher in each of these years than in either Cheshire or England and Wales and the increased incidence experienced generally in 1913 was more marked in Crewe than in the rest of the County. Though higher than any of the other figures above the local sickness rate of 3.51 in 1913 was much lower than in 1910, when it reached the highest point on record, *i.e.*, 6.49 per 1,000 of the population. In view of the increased incidence of the disease in the latter half of 1913 a special report on 108 cases has already been prepared for your consideration and here I wish again to call attention to sections IV. and V. of that report.

"The measures taken to prevent the disease were as follows:—

(a) *Isolation of the Patient.*

"In 96 of the cases (88 per cent.) this was done by the removal to the Isolation Hospital on the day the notification was received. In 12 other cases the parents desired to have the patient nursed at home and as the arrangements for isolation were adequate, no exception was taken to the proposal and there was no further spread of the disease.

(b) *Bacteriological Examinations.*

"Where circumstances indicated the necessity for bacteriological examinations, home contacts and intimate school contacts were swabbed. 204 swabs of either throat or nose were taken and 22 gave positive results. In these, if the individual presented clinical signs and symptoms as well, the case was dealt with as one of diphtheria and notified; where there were no clinical signs or symptoms then it was classed as a 'carrier' and if a school child excluded from school till subsequent swabs proved to be negative. The family doctor carried out local treatment during the period of infectivity. The medical attendants were asked to do the necessary swabbing before the patient was released from isolation at home and they co-operated in most of the cases.

"The clinical diagnosis was not always confirmed by bacteriological examination upon admission to hospital, but in doubtful clinical cases it was done and some of these proved to be negative. Under these circumstances other swabs were taken before the case was discharged.

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"The date of discharge in all cases was determined after bacteriological examination had shown that the nose and throat were free from infection. 200 throat swabs and 163 nasal ones were taken for this purpose.

"When the cases of diphtheria began to increase in number all the medical practitioners were communicated with, informed of the prevalence of the disease and asked to co-operate in the tracing of mild cases by swabbing all doubtful cases of sore throat which arose in their practices. This they did with satisfactory results; several atypical cases were diagnosed thereby and the spread of infection curtailed. A temporary Assistant Medical Officer of Health has been appointed to carry out the laboratory work, as the expense of sending so many swabs to the Public Health Laboratory of Manchester University was considerable.

(c) *Exclusion from School.*

"Those suffering from the disease were excluded for two weeks after the Medical Officer of Health had certified that they had been discharged from isolation.

"When the patient was removed to hospital all children from the house remained from school two weeks after the disinfection of the house was certified.

"When the patient was treated at home all children from the house were excluded until the patient was fit for school.

"Daily returns were received from the Head Teachers of all the elementary schools giving the names and addresses of children absent from school and reported to be suffering from sore throat. Subsequently a visit was paid to each of the homes concerned by a member of the sanitary staff and advice given as to the necessity for medical supervision in such cases.

(d) *Use of Anti-Diphtheritic Serum.*

"The serum is used very largely for treatment purposes and the lessened case mortality referred to previously is mainly due to this. At the hospital bad cases have received up to 30,000 units hypodermically. 'Carrier' cases with slight clinical symptoms are also treated with serum; the 'carrier' without signs and symptoms is treated too at times, but results have not indicated the routine adoption of the practice. One's hospital experience has led to the conclusion that antitoxic serum has not much effect in shortening the 'carrier' stage of convalescence, hence the prospect of it producing any germicidal action in the simple 'carrier' case is not great.

(e) *Disinfection.*

"Infected bedding and clothing were removed to the Isolation Hospital for steam disinfection and infected rooms disinfected either by formalin vapour or spray. Where any classroom infection was suspected in a school the formalin spray was used as a routine practice and the necessary disinfection of pencils, pens and books seen to as well.

(f) *Sanitary Defects.*

"The house drains were tested when the enquiry was made into each case and the necessary measures taken to remedy any defects. Defective sub-soil drainage was discovered in certain streets and water found lying upon the top of the concrete under the wooden floors of front sitting-rooms. The owners in such cases carried out at once the suggestions made to them and excavation showed that no provision had been made for adequate sub-soil drainage before the buildings concerned were erected. In a district such as this where the geological formation of the area makes natural sub-soil drainage rather insufficient and thereby contributes to a damp sub-soil—the more thorough the drainage of all sites before dwelling houses are erected the better.

(g) *Complaints re the Escape of Sewer Gas.*

"During the period under review one had occasion to report to the Health Committee that numerous complaints had been received from various parts of the town as to the escape of sewer gas from the 'Alexander' type of street gully and as difficulty was experienced by the Borough Surveyor in obtaining the consent of property owners and householders to the erection of ventilating shafts fixed to houses the Local Authority was advised that in such cases other methods of sewer ventilation should be adopted. The comparative flatness of the district—the highest altitude is only 200 feet and the lowest 113 feet above ordnance datum—increases very materially the engineering difficulties experienced in providing a good fall in the sewers, while the scanty rainfall in 1913 reduced the natural flushing.

"Some of the general conclusions to which I have come are:—

1. Diphtheria has been more or less endemic in Crewe for some years, with periodic increases in its incidence.
2. Personal contact has played a considerable part in the spread of the disease and 'missed' mild sore throats with Klebs-Loeffler bacilli therein have contributed to this.

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3. Delay in obtaining medical advice has been the cause of the household spread in a proportion of the cases.
4. The evidence indicates that the 'carrier' case contributed to the spread of the infection and, as in 1910, more of the carrier cases were detected among the home contacts than among the school contacts.
5. The more bacteriological work that is done to detect mild 'missed' cases the better will be the protection afforded to the community.
6. The treatment of pathological conditions in the nose and throat of all school children so affected will be advantageous.
7. The prevention of dampness in houses and of the other general factors mentioned which increase the vulnerability of the body to infection is of importance."

DUKINFIELD MUNICIPAL BOROUGH.—"During the past year the death-rate from diphtheria was 16 per cent. It is remarkable that during the past 12 years the deaths from this fatal disease have been so few, there being only 33 deaths out of about 238 cases. The cases of mortality in previous years have been as high as 30 per cent. and upwards. I attribute this to the fact that in most cases anti-diphtheritic serum is used very early on in the illness and with excellent results, as there is no reason to believe that the attacks themselves are less severe. The Sanitary Committee supply the serum free of charge in all cases."

HYDE MUNICIPAL BOROUGH.—"Four deaths were registered from this cause during the year, giving a death-rate of .11 per 1,000 of the population, compared with five deaths and a death-rate of .15 in 1912. Thirty-two cases were notified, 22 of which were isolated in hospital. Antitoxin is supplied free of cost by the Corporation for use in the borough.

"The following reports on the sanitary condition of a farm from which milk is supplied to the borough were presented to the Sanitary Committee on November 19th:—

*To the Chairman and Members of the
Sanitary Committee of the Borough of Hyde.*

Gentlemen—On November 5th I received a communication from Dr. C. J. Bennett, Medical Officer of Health for the district of Chapel-en-le-Frith, in which he stated that a

case of diphtheria had been notified at the farm of Mr. Wm. Oldfield, Peak Forest, who supplied milk to the Hyde district. Dr. Bennett intimated that he had inspected the farm and had found it in a very insanitary condition and that the Sanitary Committee of the district were of opinion that the milk supply from the farm should be stopped until such time as the farm had been made sanitary. On October 18th a case of diphtheria was notified at 246, Market Street, Hyde, the infection of which could not be traced to any other source than the milk supply. This family was supplied with milk from the farm of Wm. Oldfield. In accordance with section 4, Infectious Diseases Prevention Act, 1890, after obtaining an order of a Justice having jurisdiction in the County of Derby and accompanied by Mr. Blakemore, veterinary inspector, I inspected the dairy on November 7th. I found the water supply was obtained from a well about 20 feet deep, covered by a loose flag, situated immediately outside the kitchen window, in a passage over which all the traffic to and from the farm buildings takes place. Three feet away from this well is placed a gully, into which the slopstone waste-water discharges. At the time of inspection the trap of the gully was blocked and the waste-water from the slopstone was overflowing into the well. There is also risk of contamination from this drain if at any time the drain pipes should leak.

There are two milk-houses, one situated at each side of the dwelling-house and practically under the same roof. In the one most used the floor tiles were broken into pieces a few inches square, were loose and permeated underneath with a filthy fluid. There were two galvanised iron vessels in which the milk was said to be cooled; these were half-full of very dirty water which did not seem to have been changed for some time and the vessels themselves were crusted with dirt. The milk-house was dirty and littered with rubbish. The other milk-house, which was said to be unused at present, contained a milk separator. Opening directly from this milk-house was a door, which led by a dark-covered passage to a midden-privy, also a trapdoor, through which the pigs were fed in the pig-stye immediately adjoining. The pig-stye is about 30 feet away from the well, also there is a large manure heap, with liquid manure twenty yards away, from both of which there is great danger of pollution. I am of opinion that infection is caused and is likely to be caused in the district from the milk supply from this dairy.

J. BENNETT,

Medical Officer of Health, Borough of Hyde.

Hyde, November 7th, 1913.

I hereby certify that I have this day examined 10 cows, the property of Wm. Oldfield, Peak Forest, and also the shippons. The cows, with the exception of an aged roan cow, aged and wanted casting, also a black ew, which appeared to have a slight induration of the udder, which ought to be seen to, looked healthy and in good condition. The shippons were badly ventilated and much too low. There was not sufficient space for the number of cows kept; in fact, half the number would be sufficient. The places were very unsatisfactory in every respect.

F. BLAKEMORE, M.R.C.V.S.

"An order was made on 27th November requiring Mr. Wm. Oldfield not to supply any milk from his farm within the district of Hyde. On the completion of satisfactory alterations the order was withdrawn on 11th December, 1913."

LOWER BEBINGTON URBAN DISTRICT.—"On September 20th a notification was received of case A., a child aged five years attending Church Drive School. On September 22nd B. and C. were notified, both aged seven years and attending the above named school. Investigation shewed that the milk supply of A. B. and C. was drawn from three different dairies and that the only common feature of the three cases was attendance at Church Drive School, where the children were taught in the same department. In company with the Sanitary Inspector I proceeded to this school and examined the throats of 92 children, observing precautions so that the instruments used in the examination were thoroughly disinfected prior to use in each individual child. Many of the children shewed catarrhal throat conditions which were presumably associated with sudden weather changes from very hot sunny weather to cold and wet. Three children had markedly congested and suspicious looking throats with glandular enlargements and from these swabs were taken and sent to the Clinical Research Association, which reported the presence of Klebs Loeffler bacilli in one case. Following this visit to Church Drive School two cases of diphtheria were notified by medical practitioners, both children were in attendance at that school. A second visit was made to the school and the children's throats were examined as on the first occasion; swabs were taken from twelve throats and three were reported as having Klebs Loeffler bacilli and many of the remainder shewed the presence of Hoffman organisms. The teachers were instructed to exclude all children who presented any signs of illness and were authorised to provide antiseptic lozenges containing formalin for the

use of all who were in attendance at the school. A thorough investigation of the sanitary conditions appertaining to the school was carried out and the drains were found to be in a satisfactory state. Pencils and paint brushes in common use were destroyed or soaked in formalin. Three cases were then notified by private practitioners; two attended Church Drive Sunday School and one was a scholar from Park Road School, Port Sunlight. Attention was next directed to absentee children from Park Road School; swabs were taken from their throats in their own homes and submitted for examination, but in every instance the report received was a negative one. As in six cases the milk supply was ascertained to come from one vendor, he was required to supply a list of names and addresses of his customers, but a survey of this series of names dispelled any suggestion that the infecting source was milk. At a subsequent visit to Church Drive Schools 16 swabs were taken from children whose throats were congested or who had nasal discharge and three of these were found to have *Klebs Loeffler bacilli*. Eighteen cases had been notified up to this date and of these 17 were treated in the Clatterbridge Isolation Hospital, whilst the remaining case was under conditions which permitted of home isolation. Nine further cases have been notified and of these four attend Church Drive School: out of the other five one had ample opportunities for infection from children attending that school, but in four instances definite contact could not be traced. One of these latter patients was a young woman in business in whom the illness terminated fatally. Rumour of sore throats among the workers in Port Sunlight Perfumery Department of Messrs. Lever Bros. induced a visit to these works and an examination of the throats of women who had been recently away from their employment owing to illness; swabs were taken but in each case the report received was negative. Immediately upon the receipt of a notification the Inspector and his men have tested the drains of the homes of the patients and have had any defects found remedied. The removal of the patient to hospital has been followed by vigorous disinfection, including stripping of the paper from the walls. The Education Committee were asked to supply a nurse for the purpose of excluding children with sore throats from the classes by a daily visit and routine inspection during the epidemic so that the Local Education Authority might co-operate actively with the Local Sanitary Authority in preventing the spread of infection. The request was refused, but an intimation that closet flushing was not frequent enough led to a more satisfactory arrangement in this connection."

DIPHTHERIA

BREDBURY AND ROMILEY URBAN DISTRICT.—“Diphtheria has been notified more than usual this year and as most of the cases appeared in and about Higher Bents Lane, Bredbury, several special inspections were made to discover any possible cause. The ground there is low-lying, flat and damp; the sub-soil is stiff clay and rain water is a long time getting away. Freshly-manured fields and a large refuse tip also contributed to cause sore throats and notice has been sent warning the farmers not to use ashpit refuse on these fields as manure and also the refuse tip has been discarded and covered over as well as it can be. Also a disused pond, which I found to be in a filthy state, has been ordered to be filled in and done away with. Besides these improvements attention has been given to the existence of ashpit privies and wherever these have been found to be defective, or in bad repair, notice has been sent to have them thoroughly repaired and, in many cases, converted into w.c.’s. In these ways I have done what I can to prevent diphtheria and other diseases of a like nature.”

ELLESMERE PORT AND WHITBY URBAN DISTRICT.—“Sore throats were very prevalent throughout 1913 and occurred chiefly in the more urban parts of the district. Reference has already been made under the heading of water supply to a state of affairs which is a general menace to health and ought not to be allowed to persist. Many sore throats shewed the pseudo-diphtheria organism to be present. There were seven deaths from diphtheria and this mortality is partly accounted for by measles preceding the throat trouble. The crowded state of the houses and a failure to recognise the gravity of the condition early enough were also factors in producing a fatal issue. The following handbill was issued and distributed round the district in order to try and obtain earlier notifications:—

‘SORE THROATS.

All Persons are urgently requested to obtain Medical Assistance in cases of Sore Throat, as DIPHTHERIA is prevalent in the district.’ ”

LYMM URBAN DISTRICT.—“There were 34 cases, with three deaths. The first case was reported March 25th, aged three years. The second case was reported April 9th, aged seven years. The third case was reported April 28th, aged six years. In July there were 10 cases, all treated in the Hospital. In September there were seven cases, six in the Hospital and one at home. In October there were 10 cases, six in the Hospital and four at home. In November there was one case, treated at home. In December

there were three cases, treated at home. Four families furnished 11 cases, three families with three cases each and one with two cases. With these exceptions no case could be traced to any other known case and no carrier could be found. The cases were not confined to any one school or part of a school, or to any one district, or milk or water supply. All parts of the district were affected by one or more cases each and when the incubation period was well over another case would occur at a considerable distance from the last, with which there could not be found any possibility of infective contact. I think there must have been one or more carriers infecting 'suspects.' Of the three fatal cases two were of the laryngeal type. In both tracheotomy was performed; one was just turned a year old, the other a very delicate child of six years, crippled with rickets. Altogether, six of the cases were laryngeal, four of them recovered and tracheotomy was performed in five. The third fatal case succumbed to pneumonia caused by diphtheritic paralysis which allowed the food to go into the air passages. This case was first diagnosed by the paralysis and had not been treated for diphtheria by antitoxin. Another case of paralysis which had been so treated recovered. Without laying undue stress upon this, it tends to weigh in favour of antitoxin. In all the reported cases 2,000 units at least of antitoxin were used. The case mortality was 8.8 per cent. The experience of this year impresses on us the following points:—Diphtheria can be and in my experience most often is, spread by 'carriers' who are seemingly in perfect health, with no discharge from nose or ear, or without any outward sign of illness at all, from whom, however, a swab from the throat would give a cultivation of diphtheria bacilli. Second, that the liability to diphtheria depends much more upon the resistance of the recipient of the germ than upon its presence and invasion. Of course another important factor is the dose of the poison received, and this again depends upon the duration and intimacy of infective contact of giver and receiver and again on the comparative virulence of the germs of the giver. What ultimately causes the lowered resistance of a 'suscept' I cannot say, but of one thing I feel sure, that a continuous atmosphere of impure air, such as may be that of a school, or over-crowded living, or especially bedroom, is a certain and most important factor in lowering the resistance to diphtheria or any other infective disease."

NESTON AND PARKGATE URBAN DISTRICT.—"Five out of the six diphtheria cases were removed from their homes and treated in the Isolation Hospital. Two cases of diphtheria proved fatal largely because of delay in obtaining medical assistance, the condition being regarded by the parents as not serious. The

DIPHTHERIA.

source of infection in two of the patients was probably contact with unknown carriers in Liverpool, to which city they had travelled a few days prior to the outset of the illness. A factor in the production of one case may have been playing around ashpit refuse heaped upon a roadway before removal; and another case, with sore throats in the neighbouring cottages, was associated with the unsatisfactory state of the watercourse mentioned in an earlier part of this report. There was nothing in the surroundings or associations of the remaining cases to account for infection."

RUNCORN URBAN DISTRICT.—"Ninety-four cases of diphtheria were notified during the year. Fifty cases were notified during the preceding year, an increase of forty-four cases; these cases were pretty evenly distributed all over the Urban area. The incidence of the disease appears to have fallen more heavily on the first four months and the two last months of the year. It is rather remarkable that only seven cases were notified during the school holidays, one case in August, five cases in September and one case in October. It looks as if school attendance has a good deal to do with keeping alive this troublesome and intractable disease."

WINSFORD URBAN DISTRICT.—"After 17 years of practical immunity, 1907 suddenly produced 20 cases, 1908 29 cases and 1909 25 cases. There was a lull in 1910 (eight cases) and 1911 (nine cases. Then 1912 had 46 cases, (see last Report); and now 1913 has had 120 cases; a very evil record and one which has imposed a strain on the Inspector under which I have constantly expected him to collapse.

"The following is an analysis of the cases:--

1913.	Cases occurred.	Removed to Hospital.
January ..	9	8
February ...	9	9
March ...	2	1
April ...	1	1
May ...	6	4
June ...	13	12
July ...	32	25
August ...	8	6
September ...	8	8
October ...	10	9
November ...	19	15
December ...	3	3
	120	101

"Compared with ten deaths among 46 cases in 1912, this record of six deaths in 120 cases in 1913 must be considered highly satisfactory. Also the removal to hospital of 101 cases out of 120 is very good work; and the number would have been even larger, had not the accommodation at the hospital been overtaxed. The almost entire disappearance of the epidemic in March and April, followed by a serious increase in June and July, is noteworthy. The Dierden Street School was twice implicated and was closed July 17th to 26th and October 25th to November 8th; six cases on the former occasion and 13 on the latter forming definite groups; except for this the cases were widely scattered and impossible in most instances to connect with one another. Wharton has only half the population of Over, yet it had 74 cases as against 46. During the progress of the epidemic its causation was a matter of earnest consideration. Many common causes could be at once rejected. Looking back upon it now, my opinion is that, a fair proportion of the cases being of a mild type, there probably existed others still milder, which were never recognised, but which were still able to convey infection. The system of scavenging, whereby ash-pit contents were placed in the streets to wait (sometimes many hours) for a collecting cart, naturally offers itself as a possible means of distribution and of course there is the awful condition of fouling of subsoil from thousands of cess-pits which has been often condemned ever since annual reports began to be written. Whether under pressure from the epidemic or not, the year 1913 has seen a genuine effort to remedy these matters. Ash-pits have been condemned; sanitary ash-bins are required; the deposit of their contents on the streets is prohibited; a very important new main sewer has been laid in Wharton and conversion of privies to water-closets is steadily proceeding hand in hand with general improvements to houses under the H.T.P. Act. An unusually large number of cases occurred in persons of advanced age.

"I regret to say that at the time of writing (February, 1914), the epidemic is continuing."

MACCLESFIELD RURAL DISTRICT.—"There has unfortunately been a large increase in the number of cases of this disease throughout the year and four deaths are attributable to this cause. The majority of the cases occurred in Poynton. In most of the cases it has been found practically impossible to trace the source of the infection and as they are spread over a wide period of time the only probable conclusion is that some of these cases—after apparent recovery—acted the part of 'carriers,' and thus disseminated the disease."

DIPHTHERIA—SCARLET FEVER.

WIRRAL RURAL DISTRICT.—“Thirteen cases were notified in six townships, viz., four in Little Sutton, four in Heswall, one each in Prenton, Spital, Raby, Caldy, Hooton; eight of the patients were treated in hospital. The Little Sutton outbreaks were two in number; three cases occurred in one house, which two months earlier had three cases of scarlet fever in it. The cases did not seem to be independent of one another and presumably the infection was a mixed one of scarlet fever and diphtheria. The other Little Sutton outbreak was limited to one house and to one child; the infective source was a child who had been sent to the country to convalesce after a ‘mild attack’ of diphtheria. The Spital case was a child from Ellesmere Port who at the time the disease was recognised was an inmate of Clatterbridge Workhouse. The Heswall patients numbered four. A bacteriological report was received in one case only and a suspicion is attached to two of these patients that they introduced scarlet fever into the diphtheria wards of the hospital. The Prenton, Caldy, Raby and Hooton patients were treated in their own homes and only in the last case was a positive bacteriological report received.”

Scarlet Fever.

The total number of cases of this disease notified in the Administrative County during 1913 was 1458.

The disease was, except in rare instances, of a very mild type and therefore much more difficult to control. The death-rate was only 0.05 per thousand of the estimated population. The areas which suffered most severely from this disease were the following:—

Macclesfield M.B.	...	296 cases
Dukinfield M.B.	...	105 „
Hyde M.B.	...	95 „
Crewe M.B.	...	82 „
Bucklow R.D.	...	67 „
Runcorn R.D.	..	61 „
Congleton R.D.	...	59 „
Ellesmere Port and Whitby U.D.		54 „
Wirral R.D.	...	53 „

The following are the comments of the District Medical Officers of Health on this subject:—

CREWE MUNICIPAL BOROUGH.—“In the last two years the incidence of scarlet fever in Crewe has diminished very much and this is all the more noticeable when the increase in England

and Wales generally is taken into account. It is a well established fact in epidemiology that the infection of scarlet fever comes in waves, the crest of the waves being the years of highest incidence. The trough of the local wave was reached in 1913 and it is curious to find that it does not correspond to a similar trough in the England and Wales wave of infection.

"A total of 10 cases in one department spread over the year was the highest number in any one school. When any marked increase in the number of scarlet fever cases is found at a school, a special enquiry is made and 'missed' or 'carrier' cases particularly sought after.

"There were no deaths in 1913, the average case mortality (10 years, 1903-12) being 2.4 per cent. The average annual number of deaths from this cause for 32 years (1881-1912) has been 10."

DUKINFIELD MUNICIPAL BOROUGH.—"In 1913 there was an epidemic. Not only Dukinfield, but all the surrounding towns were invaded by this disease.* At all events, we were no worse off than our neighbours. One hundred and five cases were notified during the year—four in the first quarter, seven in the second, forty-one in the third and fifty-three in the fourth—so that in the first half of the year there were eleven cases and in the second half ninety-four. In eight houses more than one case of scarlet fever was notified. In five of these houses duplicate cases occurred, which were notified on the same day. In one house three cases were notified at one time and one eighteen days after. In another two other cases occurred fifteen days after the first case. In another house two cases were notified at once, two others fourteen days later and a fifth fourteen days after the second notification. I have made an analysis of the cases during 1908 before this treatment was adopted and I find that out of 112 cases notified 38 were duplicate cases. I have not been able to go into previous years, but I have no doubt that a like proportion of duplicate cases occurred.

"On grounds not only of efficiency, but of economy I strongly advocate the continuance of the method advocated by Dr. Milne of treating scarlet fever at home. Not only is the expense of maintaining a hospital for these cases saved, but if the treatment is really carried out from the onset of the disease strong disinfection and destruction of clothing, books

* Note by County Medical Officer of Health. The results of notification do not entirely bear out this statement.

SCARLET FEVER.

and other materials are unnecessary. In very few cases was disinfection of the house afterwards carried out and that was at the wish of the people themselves rendered in the houses. In most cases no disinfectants at all were used. I am so satisfied with the results of this treatment during the past four and a half years that I recommend its continuance. At the same time, if the Council can see its way to provide a thoroughly reliable nurse to see that it is properly carried out in every case, I am confident that the money will be well spent and the risk of duplicate cases nullified."

ELLESMERE PORT AND WHITBY URBAN DISTRICT.—"There were two deaths from scarlet fever, but the great majority of the cases were of a very slight character and in several instances nothing was noted by the parents until the children were peeling. The association of Ellesmere Port people with Wolverhampton, Birmingham and the Midlands, where scarlet fever was rife during 1913, undoubtedly accounted for some of the cases notified."

LYNN URBAN DISTRICT.—"Of the eight cases of scarlet fever five (three from one family) were isolated in the hospital during its second period of occupation in the last quarter of the year, at the same time as diphtheria cases were there, so that both wards were open. They were all of a very mild type. The other three occurred at long intervals and in different districts. The first case of these occurred in March, in a tubercular child, was very malignant and died within a week with septic throat and pneumonia complication. It is years since I saw a case of this type and I was beginning to believe that, at least in our district, scarlatina was no longer the dread disease it used to be twenty or thirty years ago all over the country."

WIRRAL RURAL DISTRICT.—"The scarlet fever patients numbered 53 from 13 townships and 42 were removed to the Isolation Hospital. Five of the Heswall cases came from the Liverpool Country Hospital for Children and represented five separate introductions of infection, in all probability by relatives of the patients on visiting days. Four of the Bidston cases originated in a case discharged from hospital which developed a copious otorrhœa. In one case in Landican the disease was contracted from another 'return' case. Scarlet fever has been rife in the neighbouring towns and contact with town cases was undoubtedly the origin of some of the outbreaks."

Enteric or Typhoid Fever.

With the exception of an outbreak of limited extent in Macclesfield Municipal Borough involving 31 cases this disease has been prevalent to a very small extent in the County during 1913. The total number of cases reported during 1913 was 154. I append a few of the important extracts from the reports of District Medical Officers of Health on this matter.

STALYBRIDGE MUNICIPAL BOROUGH.—“Ten cases were notified during the year and four deaths took place. The following are the numbers for recent years :—

	1904	1905	1906	1907	1908	1909	1910	1911	1912	1913
No. of Cases	17	16	11	9	14	25	18	20	9	10
„ Deaths	6	4	1	3	5	2	3	7	2	4

“We have not a hospital for these cases so that usually they have to be treated at home, often under the most disadvantageous conditions. When, however, the Borough Hospital, Ashton-under-Lyne, is available for the reception of these cases our Sanitary Authority are kindly permitted to make use of the hospital for such cases from our borough as we may desire to send there. When cases of typhoid fever have to be treated at home great precautions to prevent its spread are taken by our Sanitary Authority in providing special pails with disinfectants for the reception of all discharges from the sufferer, in instructing the inmates upon the necessity for strict personal cleanliness of the patient and themselves, as well as for cleanliness of the bed and body linen, in advising the destruction of all food left by the patient and in the destruction of beds and mattresses which have become much soiled with discharges. The sanitary conveniences of the premises also receive prompt and thorough attention.”

BOWDON URBAN DISTRICT.—“The number of infectious diseases reported during the year was 22, being the greatest number for any year since I have been Medical Officer of Health, *i.e.*, twenty years. The increase is chiefly owing to the outbreak of typhoid in the Altrincham Girls' High School in October last, of which nine cases lived in Bowdon.

“After a very exhaustive enquiry by Dr. Meredith Young, the County Medical Officer of Health, assisted by myself, everything pointed to the original cause of the epidemic arising from a girl, Annie Atkinson, residing in Hamilton Terracc, Bowdon, who worked at the school as a general servant and had the handling of the cups from which the cold milk was drunk by the infected children. This girl had been away from home twice in September, was ailing from 5th October, when she no doubt developed a very mild ambulatory type of typhoid and

ENTERIC OR TYPHOID FEVER—MEASLES.

this relapsing on the 25th October, in a severer form, she was removed to the Altrincham Fever Hospital. All the cases of enteric from this epidemic living in Bowdon and the surrounding district recovered and we are now free from the infectious disease."

BREDBURY AND ROMILEY URBAN DISTRICT.—"Only three cases of typhoid fever have been notified and I have investigated each and found the probable cause; they were all imported cases and not in any way connected with each other. The first was a professional nurse who came from attending a typhoid patient to nurse a child with scarlet fever here and broke down after a few days. The second was a gentleman just returned from Rotterdam where he tells me the disease was very prevalent and the third case I have reason to believe arose from eating mussels. Confirmation of the diagnosis was made bacteriologically in each case and one was treated at the hospital. Two of the patients recovered."

HALE URBAN DISTRICT.—"Up to this year no case of typhoid fever had occurred in the district since 1910 and of the eight cases notified this year six were, at the time of the outbreak, at the County High School for Girls, Dunham Massey. Four cases were directly traceable to the school and the other two cases were no doubt directly connected with the school epidemic. The remaining two cases were undoubtedly contracted on the Continent."

NORTHWICH URBAN DISTRICT.—"The comparatively large number of ten cases of typhoid fever was notified. The first was notified in April and does not appear to have any connection with the others. At the end of July another case occurred in New Street, followed in 14 days by two more in the vicinity and this is the place where two small outbreaks have occurred at former periods. It is the Irish quarter and there are some common lodging houses close by. All the cases were sent to hospital and drastic steps to disinfect the houses, cesspools and sewers taken, the streets and channels were washed down with disinfectant and the sewers also flushed. The last case occurred on October 28th."

Measles.

There have been a considerable number of outbreaks of this disease during 1913 and the only thing one can say about them is the oft-repeated one that if Sanitary Authorities could manage to impress on parents the seriousness of the disease and induce them to take rational precautions against it the death list would not be so heavily weighted with sacrificed child life.

Puerperal Fever.

This is dealt with more fully in the section relating to midwives. The number of cases notified during 1913 in the Administrative County was not large (24), but every case of puerperal fever which occurs is really evidence of neglect or carelessness somewhere and there is really no need for a single case to occur any more than there is any need for "blood poisoning" to set in after a surgical operation. In other words the infection is, in all but the merest fraction of cases, derived from outside and is therefore a thing which can and should be prevented. With the coming of the properly trained midwife and the disappearance of the ignorant and often meddling "bonâ fide" woman cases of puerperal fever ought to shrink almost to vanishing point.

Poliomyelitis.

WINSFORD URBAN DISTRICT.—"Two cases. March 29th, female, one year. October 19th, male, two years. Both cases survive. Nothing is known of any special circumstances at beginning of illness. No measures were taken by the Health Department. The cases were not removed to hospital. There was no bacteriological verification of diagnosis. The medical men inform me:—(1) Paresis and wasting of extensors and flexors of right leg. Is taken at intervals to Children's Hospital, Manchester, as out-patient. (2) Is improving under treatment; paralysis of muscles of right leg."

CONGLETON RURAL DISTRICT.—"Two cases of this disease have been reported to me, one a girl, aged five years, occurred in a house where there had been a case in the previous year and entirely recovered, the other occurred at Betehton. There is still some paralysis, but the medical man believes he will eventually recover. We could not trace the origin of the other case, a boy, aged six years. Both cases were treated at home."

MACCLESFIELD RURAL DISTRICT.—"One case of this disease was notified from Great Warford. It was originally stated to be a case of cerebro-spinal fever, but after a lumbar puncture had been made, this notification was withdrawn and one of acute poliomyelitis substituted. The patient—a girl of ten years—came to Great Warford on Friday, the 24th October, 1913, from her home in Disley Rural District, where already two of her sisters, aged two and three-and-a-half years, respectively, had been suffering from acute poliomyelitis in a mild form. On the day following her arrival she was seized with an illness resembling influenza with a rise of temperature, injected pharynx, headache, extreme drowsiness and weakness. Slight tenderness in one

POLIOMYELITIS—CEREBRO-SPINAL MENINGITIS.

knee-joint was noticed next morning and later that day the child complained that her legs felt heavy. On the third day of the disease there was distinct paralysis of both legs with great tenderness in the back of the neck, spine, abdomen and legs, accompanied by retraction of the head. Gradually all the limbs became involved in the paralysis and there was also incontinence of urine and faeces. On the sixth day of the illness a lumbar puncture was made but no cells or diplococcus intracellularis were detected microscopically—the fluid being quite clear. Subsequently the acute symptoms gradually subsided. The left arm—the last and least affected—speedily regained complete power. The right arm recovered except for marked weakness of the deltoid and triceps muscles. The muscles most affected in the legs were the quadriceps extensors—the left suffering more than the right. When the child left this district on the 24th of November, she was still unable to sit up in bed and had very little movement of the legs, but her condition has subsequently improved. During the course of the illness the patient was rigorously isolated and the other children of the household were removed. Due precautions were observed to prevent the spread of infection, particular care being exercised in regard to the nasopharyngeal secretions. On the termination of the illness thorough disinfection was effected, some of the bedding used being burned and the rest, together with personal clothing, &c., being disinfected by steam. The room was sprayed by means of formaldehyde.”

Cerebro-Spinal Meningitis.

MACCLESFIELD RURAL DISTRICT.—“Although no case of this disease was actually notified as occurring in this district, a notification was transferred on 26th December, 1913, by the Medical Officer of Health for the City of Manchester of such a case—then in the Manchester Royal Infirmary—which had been sent there from the Sandlebridge School for Mentally Deficient Children and which may therefore legitimately be considered as belonging to this district. The patient, aged 18 years, a male inmate of the Sandlebridge School, had suffered about a fortnight before the onset of his illness from a fall upon his back and some days subsequent to this had been bitten upon the left arm by a horse, the bite causing a septic wound. On the 10th December his illness began with a violent convulsion, followed by vomiting, which lasted 48 hours. The next day there was marked retraction of the head and distinct paresis of the left leg affecting especially the extensor tendons. The knee-jerks were exaggerated and Babinski's sign was present. The pulse was slow—about 50 per minute—and there was no rise of the temperature. There was

CEREBRO-SPINAL MENINGITIS—PTOMAINE POISONING—TUBERCULOSIS.

tenderness along the spine and the back of the legs. On the 16th December the patient was removed to the Manchester Royal Infirmary, where he died on 30th December, from cerebro-spinal fever and basal hæmorrhage. It was found on receipt of the notification that disinfection had already been carried out as far as possible by the school authorities, who had burnt some of the bedding and treated the clothing by means of boiling water. The room, however, was sprayed with formaldehyde vapour by the Inspector and disinfectants were provided for the thorough cleansing of floors, furniture, etc.

“(For many of the details regarding this and the previous case above I am greatly indebted to Dr. Mellraith, the Medical Officer to the Sandlebridge Schools.”)

Ptomaine Poisoning.

NORTHWICH URBAN DISTRICT.—“An outbreak of this disease occurred on the 30th of May, some score of people being attacked by vomiting and diarrhœa. It was found that all had partaken of pressed beef and two portions were secured which had been left over from meals at which the patients had evidently contracted the complaint. The whole of the pressed beef at the shop from which the tainted portions came was seized by the Medical Officer of Health. The samples were sent to Professor Delépine, as also were samples of blood, urine and fæces. Very numerous and exhaustive microscopical and culture tests were made and a very comprehensive report furnished, but the net result was :—

- (1) No direct experimental evidence that any of the specimens of meat contained noxious bacteria or poisonous substances.
- (2) Nothing found in the products obtained from patients themselves which threw any light upon the nature of their illness (these specimens were collected only six days after onset of disease)

“So that the illness could not be by this means traced to the meat.”

Section V.—Tuberculosis.

Pulmonary Form.

The total number of cases of pulmonary tuberculosis notified to Sanitary Authorities in the Administrative County during 1913 (from the 1st February, the date when the Order came into force) was 754, namely, 421 in males and 333 in females. The greatest number of these notifications, 180 cases, related to persons between the ages of 25 and 35 years, the next age-period (35 to 45 years) providing 157 cases. Cases occurring at the various other age-periods are shown in the accompanying table.

COUNTY COUNCIL OF CHESHIRE.

PUBLIC HEALTH (TUBERCULOSIS) REGULATIONS, 1912.

Summary of Notifications during the period from 1st February, 1913, to the end of the week ending 3rd January, 1914.

Age Periods.	Number of notifications on Form A.													Number of notifications on Form B.					Number of notifications on Form C.		
	Primary notifications.													Total notifications (i.e., including cases previously notified by other Doctors).	Primary notifications.				Total notifications (i.e., including cases previously notified by other Doctors).	Poor Law Institutions.	Sanatoria.
	0 to 1	1 to 5	5 to 10	10 to 15	15 to 20	20 to 25	25 to 35	35 to 45	45 to 55	55 to 65	65 and upwards	Total.	under 5		5 to 10	10 to 15	Total.				
Pulmonary—Males	—	5	10	24	29	43	101	87	70	52	10	411	413	—	5	5	10	10	5	48	
Pulmonary—Females	2	5	11	16	33	50	79	70	33	12	4	315	319	2	10	6	18	18	2	27	
Non-pulmonary—Males	15	56	51	30	28	11	21	16	7	5	2	242	244	1	9	2	12	12	—	5	
Non-pulmonary—Females	9	39	68	34	34	20	18	13	9	2	1	247	248	2	3	6	11	11	—	8	
Totals	26	105	140	104	124	124	219	186	119	51	17	1215	1224	5	27	19	51	51	7	88	

PULMONARY TUBERCULOSIS—NON-PULMONARY TUBERCULOSIS.

The deaths from pulmonary tuberculosis numbered 428, namely, 143 in the six Municipal Boroughs, 181 in the 35 other Urban Districts and 104 in the 12 Rural Districts. The death-rate from pulmonary tuberculosis in the Administrative County was 0.69 per thousand of the estimated population—a material decrease on the records of the preceding years. This rate has never been lower on any previous occasion since the year 1892 (which is as far back as I can get reliable records).

The districts showing the highest number of cases notified are as under:—

Macclesfield M.B.	...	78	cases
Stalybridge M.B.	...	61	„
Crewe M.B.	..	59	„
Runcorn R.D.	...	50	„
Altrincham U.D.	...	35	„
Sale U.D.	...	34	„
Wirral R.D.	...	34	„
Dukinfield M.B.	..	30	„
Bucklow R.D.	...	28	„
Ellesmere Port and Whitby U.D.		26	„
Northwich U.D.	...	26	„
Runcorn U.D.	...	25	„
Lower Bebington U.D.	..	25	„

Having regard to the size of the population, the records for Altrincham, Sale, Ellesmere Port, Runcorn and Lower Bebington are distinctly unsatisfactory, though they may largely be accounted for by local conditions. Details as to the number of cases in other districts are given in the large table accompanying this statement.

There is a distinct improvement in the measures carried out by Sanitary Authorities to prevent this disease, as will be seen from the extracts from the Medical Officers' Reports which I quote. When these measures are supplemented by the comprehensive scheme for treatment and prevention now being commenced by your Council, it is hoped that considerable gaps will be made in the ranks of the enemy we are fighting.

Non-Pulmonary Forms of Tuberculosis.

As stated elsewhere this group includes tuberculosis of the meninges (covering membrane of brain and spinal cord) of the bones, joints, glands, abdominal organs, &c. The number of such cases notified during 1913 was 512, namely 254 in males and

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258 in females. The number of these cases was highest in young children as is, of course, usual. In the age-period one to five years the notified cases numbered 98, in the five to ten year age-period there were 131, in the ten to fifteen age-period 72 and in the fifteen to twenty age-period 62 cases. The number of cases at these age periods was fairly equal in males and females.

The districts in which relatively high numbers of notifications were received were as under :—

Runcorn U.D.	...	...	135 cases.
Crewe M.B.	...	...	58 „
Macclesfield M.B.	...	...	56 „
Runcorn R.D.	...	...	43 „
Hoyle and West Kirby U.D.	...	...	25 „
Dukinfield M.B.	...	...	25 „
Stalybridge M.B.	...	...	23 „
Wirral R.D.	...	...	22 „
Lower Bebington U.D.	...	...	20 „

The remarks of the District Medical Officers of Health are given hereunder :—

CONGLETON BOROUGH.—“Of the 10 cases of phthisis notified in the year, five died and the other five deaths were of persons who had been notified under the Tuberculosis Regulations, 1911. Of the cases of other forms of tuberculous disease, two died from meningitis and one from peritonitis, and most of the others consisted of enlarged glands or abscesses, many of whom recovered or improved; few of them seemed to be of a serious character. The Medical Officer visited all the cases and some of them several times and gave advice as to hygienic treatment. A few of the pulmonary cases and a considerable number of the others were found to be living under healthy conditions, but this was not so with regard to most of the former class, who were in over-crowded and insanitary houses where recovery was impossible and where their presence was a source of great danger to the other inmates. Three cases, after long waiting and very tiresome formalities had been gone through, were sent to sanatoria and all improved very much, but relapsed soon after returning and now are no better off than had they not gone at all. No doubt the demand for sanatorium treatment has been up to this time so much in excess of the available accommodation that it has been found necessary to discharge patients much earlier than is desirable, but it seems reasonable to expect that this difficulty will soon be removed and that curable cases will be kept for longer periods and that the hopeless ones, which are the most important of all, will be

permanently accommodated so as to remove the serious risk run by the other inmates of their homes."

CREWE MUNICIPAL BOROUGH.—"The cases notified numbered 59 and the number of deaths was 25, giving a death-rate per 1,000 of 0.54.

"Cases notified during the year :—

			Deaths among these.
Males	...	37	9
Females	...	22	6
		—	—
		59	15
		—	—
Re-notifications		8	

"Cases notified prior to 1913.

"Living at the beginning of the year.

			Died in 1913.
Males	...	21	6
Females	...	14	3
		—	—
		35	9
		—	—

"At end of 1913 there were 70 known cases in the borough.

"All the cases were visited after notification. According to the history of the illness given, it is seen that 27 per cent. of the cases notified had been suffering from the disease for more than one year. This is a considerable reduction compared to the facts elicited in 1912, when 64 per cent. of the patients notified had been ill for more than 12 months. As was to be expected in the first year of compulsory notification many old standing cases of the disease became known to the Health Department for the first time. Among 52 per cent. of the cases notified it was found that another member of the family occupied the bed with the patient. Because the infection of pulmonary tuberculosis is slow in developing, it may be a question of months, it is apparently difficult for the public to realize that there is danger of contracting infection by sleeping in the same bed with one who has the disease. The chief source of infection is the sputum and the fine spray from the breath when a patient is coughing, hence it will be readily seen that a bed companion comes into greater contact with these active sources of danger than almost any other person. One is told, only too often, when making these inquiries that the patient before any illness developed slept with another member of the family who had the disease. Still even in spite of this obser-

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vation, it is difficult to persuade many of those now suffering from the disease to use the reasonable preventive measure of sleeping alone. In some cases one finds that neither the patient nor the friends have been informed that the disease is tuberculous and it is left to the sanitary official to let them know that a notification has been received. This is a very considerable obstacle in the way of preventive measures and one which only the co-operation of the medical profession in general will obviate.

“As an aid to the early detection of pulmonary tuberculosis, the Health Committee have for some years provided for the bacteriological examination of sputa. In 1912 the specimens examined and the results were:—

	No. Specimens	Results.	
		Positive	Negative
Municipal Laboratory	119	33	86
Manchester „	22	6	16
	—	—	—
	141	39	102
	—	—	—

“Fifteen of these specimens were secondary ones, also five of the positive results, so that the 141 specimens were from 126 patients, of whom 34 had the tubercle bacillus in their sputum.

“The shelter erected in 1909 with accommodation for two beds was utilized from April to September for the reception of suitable cases. Four females were treated during this period; one was an early case, one rather more advanced and the remaining two advanced cases. The length of their stay and progress was as follows:—

1. F. Aged 27 years, homework. Admitted May 5th, discharged July 24th. Weight on admission $104\frac{1}{2}$ lbs., ditto on discharge 108 lbs., gain, $3\frac{1}{2}$ lbs. Treated with tuberculin. This patient made excellent progress and continued to do so after her return home. The tuberculin treatment was followed up there by her own doctor for some months.

2. F. Aged 33 years, housewife. Admitted April 14th, discharged June 30th. Weight on admission, $110\frac{3}{4}$ lbs., ditto on discharge $114\frac{1}{2}$ lbs., gain, $3\frac{3}{4}$ lbs. Treated with tuberculin. This patient improved while in hospital but not to such an extent as the early case, nor was the improvement maintained after discharge.

3. F. Aged 55 years, housewife. Admitted July 4th, discharged September 11th. Weight on admission 100 lbs., ditto on discharge $93\frac{1}{4}$ lbs., lost $6\frac{3}{4}$ lbs.

4. F. Aged 41 years, housewife. Admitted July 31st, discharged September 22nd. Weight on admission 89 lbs., ditto on discharge 97½ lbs., gain 8½ lbs. These two advanced cases were admitted for general instruction and training in isolation. One, a laryngeal case, was particularly infectious and a source of danger to young children at home.

"Since the shelter was opened in 1909, the patients treated each year were :—Seven in 1909, six in 1910, eight in 1911, seven in 1912, four in 1913.

"During 1913 small movable shelters for use in connection with the domiciliary treatment of the disease were provided by the Health Committee. These are of great advantage in certain cases ; patients home from the open-air life of a large sanatorium appreciate the facility thus provided for sleeping out of doors, while other cases who cannot have separate sleeping accommodation indoors find the shelter in yard or garden advantageous in both the treatment and the prevention of the disease.

"Collection and adequate disposal of the sputum expectorated by infected persons is one of the most important preventive measures which can be adopted. For some years now this Committee has provided cardboard boxes for use indoors with instructions that the box and contents mixed with a little sawdust be burned in a hot fire. Pocket flasks are also given in suitable cases and each patient who has been in the open-air shelter for treatment brings home a flask. With systematic health visiting, much more use is now made of these boxes ; 2,661 were distributed in 1913, as compared with 964 in 1912. In addition some four sputum flasks are in use.

"Disinfection of the bedroom occupied by a patient is always carried out when that patient ceases to use the room. The notifications received from sanatoria regarding the admission of patients facilitates this being done, as otherwise it might be some time before information reached the Health Department that the patient had left home.

"When the initial inquiry is made by the Lady Health Visitor, any sanitary defects reported by her are referred to the Sanitary Inspector for full investigation and the necessary action.

"The following bye-law is in force in the borough :—

"No person shall spit on the floor, side, or wall of any public carriage, or of any public hall, public waiting

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room, or place of public entertainment, whether admission thereto be obtained upon payment or not, within the borough."

"This Authority is co-operating in the provision of facilities for the treatment of cases of pulmonary tuberculosis in receipt of sanatorium benefit, in two directions: (a) by the provision of movable open-air shelters, which are loaned to the County Insurance Committee for use either in the borough or the adjacent County area; (b) by the admission of suitable cases for a course of treatment and instruction in the shelter at the Isolation Hospital. As the Local Government Board have recognised the shelter for such a purpose, the cost of the maintenance of the insured persons admitted is defrayed by the Insurance Committee.

"To ascertain how far the sanatorium benefits under the Act were likely to be a help to the notified cases of pulmonary tuberculosis, inquiry was made when each case was first visited if the patient was insured. It transpired that 24 of the 37 males notified, or 64 per cent., were insured persons, while only four, or 18 per cent., of the females were insured. Although the numbers dealt with locally are not great, still the fact that 52.3 per cent. of the cases known to exist in this area do not come within the scope of the present sanatorium benefits shows how inadequate any scheme to deal with the prevention of the disease will be unless all tuberculous persons are included. The ten patients notified under Form C. (Sanatoria) were insured persons in receipt of sanatorium benefit and sent away for institutional treatment. The following comparison between the number of cases notified, the number who were insured and the number who received any institutional treatment will indicate how few of the insured tuberculous patients have so far received treatment in sanatoria:—

	No. Notified.	No. Insured.	No. of these who received Institutional Treatment.	
Males	37	24	8	The other patient was one notified in 1912.
Females	22	4	1	

"That those entitled to sanatorium benefit are slow in applying for it is doubtless one explanation of why only nine out of 28 patients were sent away for treatment. The subsequent history of some of the patients who have been under institutional treatment indicates that the length of their stay

(three months on the average) has been too short to secure for them that prolonged improvement in their physical condition which is desirable."

DUKINFIELD MUNICIPAL BOROUGH.—"Pulmonary phthisis was responsible for 20 deaths and seven more were due to other forms of tuberculosis, compared with 25 in 1912, 31 in 1911, 20 in 1910, 28 in 1909, 25 in 1908, 33 in 1907, 25 in 1906, 11 in 1905, 18 in 1904, 25 in 1903, 19 in 1902, 24 in 1901 and 23 in 1899.

"This is an undoubted infectious disease and owing to improved hygienic conditions the death-rate has considerably decreased in recent years

DEATH-RATE.

1851-1860	...	...	2.7
1861-1870	...	...	2.5
1871-1880	...	...	2.1
1881-1885	...	...	1.8
1885-1890	...	...	1.6

The death-rate from all forms of tuberculosis in 1913 in Dukinfield is 1.35.

"The tendency to phthisis may be inherited, but whether heredity can do more than strongly predispose to the disease is less certain. It is remarkable how consumption clings, not only to certain localities, but also to certain houses without any relation as to who the tenants may be. On receipt of primary notification the house is immediately visited and instructions left for the guidance of patient and household. Subsequent visits are paid, if necessary and sputum is pathologically examined free of charge at the request of the medical attendant. Tuberculin is also supplied by the Local Authority. Patients are sent to sanatoria by the Insurance Authority at Chester and home treatment is carried on by medical attendant and patients visited by County Tuberculosis Officer. The premises are disinfected by the Sanitary Authority and disinfectants are regularly supplied."

STALYBRIDGE MUNICIPAL BOROUGH.—"During the year 61 persons have been notified as suffering from pulmonary tuberculosis, of whom 38 were males and 23 females; while 15 males and eight females have been notified as suffering from other forms of tuberculosis. As regards the number of cases occurring at different ages this was:—

Wards—Lancashire.	Stayley.	Dukinfield.	Millbrook.	
8	22	25	6	
And at age— 1-5 yrs.	5-15 yrs.	15-25 yrs.	25-45 yrs.	45-65 yrs.
1	2	15	27	16

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"Upon receipt of the notification of a patient resident at the time in the borough the patient is visited and enquiries are made as to the patient's habits and occupation, the sanitary condition of the premises, the number of inmates and the possibility or impossibility of the patient's isolation in separate bed and bedroom. A leaflet of instructions is left for the observance of the patient and the others in the home and periodical disinfection of the premises by the Sanitary Authority is also advised.

"The deaths from pulmonary tuberculosis during the year numbered 32. I quote those of recent years for comparison:—

Year—	1913	1912	1911	1910	1909	1908	1907
Number of Deaths ...	32	24	37	30	35	38	39
Death-rate ...	1.2	0.9	1.39	1.02	1.2	1.31	1.35

"From other forms of tubereulosis there were nine deaths.

"It is generally admitted that during recent years there has been an improvement in both the incidence of and the mortality from pulmonary tubereulosis. May I suggest that this improvement is not altogether due to the institution of the campaign against consumption, which I desire to see carried on with even greater vigour, but is largely due to greatly improved sanitary conditions of the homes, of the workplaces and of the factories and to instruction of the public in habits of personal hygiene, in the advantage of the open window and in the importance of plain wholesome food. Certainly as regards my own borough I contend that these latter have been the more potent factors in bringing about an improvement. Never before was the borough so sanitary, so well sewered, so well paved, nor so well supplied with an abundance of pure water as it is to-day. Much has been done during recent years, more remains to be done and must be done in the near future to still further improve the borough and I am convinced that if the money which the State is now providing towards the establishment of sanatoria was devoted to the abolition of slum and overerowed dwellings and their replacement by modern dwellings in open situation, much more permanent good would result within the next ten years than will accrue from all the treatment in sanatoria, from which the patients too often of necessity return to their former unhealthy surroundings and are then apt to grow careless as to the observance of the good habits into which they had been initiated."

ALDERLEY EDGE URBAN DISTRICT.—“Six cases of tuberculosis were notified during 1913, five pulmonary and one abdominal. These were :—

Four females, pulmonary, all between 15 and 25 years.

One female, abdominal, between 45 and 65 years.

One male, pulmonary, between 45 and 65 years.

“All cases were visited on notification. Subsequent visits were paid. Necessary advice given as to prevention of occurrence of other cases. Measures of cleansing and disinfection. Rooms are disinfected, bedding, &c., stoved or destroyed.”

ALSAGER URBAN DISTRICT.—“The premises are inspected as to their sanitary condition. They are disinfected when vacated, or after death of the consumptive. The inmates are supplied with any necessary antiseptics. Printed instructions are distributed. Their spitting cups, &c., are looked after. The Council bears the expense of any bacteriological examination for the detection of tubercle and also for other notifiable contagious diseases.

“In October I received a letter from the County Medical Officer of Health asking if I would raise any objection to the erection of small shelters in yards or gardens, if no detriment to health would be occasioned to the occupants of the patients' dwellings, or to those of the adjacent dwellings; also if the Council would undertake to provide shelters, or alternatively if they would store shelters provided by the County Council or County Insurance Committee. I reported to the Urban District Council that I had replied in the affirmative to the first question and that the other should be decided by the Council. The Council declined to provide shelters, but would be willing to provide storage facilities for shelters provided by the County Council or County Insurance Committee. We have not yet had any shelters supplied.”

ALTRINCHAM URBAN DISTRICT.—“The notifications of cases of tuberculosis were :—

Form A. 50 (pulmonary 35, other forms 15).

Form B. 0, Form C. 5, Form D. 9.

“The action taken in the cases of tuberculosis includes the disinfection of houses and effects by the Council, cards of advice provided for households invaded by the disease and attention is

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directed to the surrounding influences. So far no definite scheme has been furnished by the County Council as to institutional treatment and cases have been dealt with, as far as possible, through the agency of the Manchester Consumption Hospital and the Crossley Sanatorium at Delamere."

HIGHER BEBINGTON URBAN DISTRICT.—"One pulmonary and one 'other' tuberculosis case were notified. I visited the pulmonary patient and examined him at the request of the Insurance Committee, with the sanction of his medical adviser. He was removed and treated in a sanatorium, but the disease proved fatal. Systematic arrangements will be in force at an early date for the utilisation of the services of the Tuberculosis Officer and the examination of contacts."

LOWER BEBINGTON URBAN DISTRICT.—"Forty-five cases of tuberculosis were notified, of which 25 were pulmonary and 20 'others.' Four of the pulmonary cases received treatment in the Poor Law Sanatorium at Clatterbridge. Eight were treated in other hospitals or sanatoria. A large proportion of the 20 'other' forms were glandular cases and the enlarged glands were excised in the Cottage Hospital at Port Sunlight. The patients have been visited in their own homes, but no attempt has been made to search out contacts. Disinfectants have been supplied from the Council stores to some of the cases and in every case when death has supervened a thorough disinfection has been performed. Arrangements have not been made for utilisation of the services of the Tuberculosis Officer, who is an official of the County Council and no nurses have been appointed."

BOLLINGTON URBAN DISTRICT.—"Two cases of pulmonary tuberculosis were also notified. One of these was sent to a sanatorium for a period. This case ended fatally in December last. Tubercle bacilli were found in the sputum of the other case by Dr. Annett at the Runcorn Laboratories. At the close of the year there were four cases of pulmonary tuberculosis living within the district. On receipt of a notification of such a case the house of the patient is visited by your Medical Officer of Health. Enquiry is made into the family history, numbers living in the houses, numbers using the same room for sleeping and as to means of ventilation, possibility of room for providing a shelter, place of work, &c. Advice is given on any points needed and the necessity of taking all precautions to prevent the spread of infection to the other inmates is pointed out. This visit is followed up from time to time

by other visits, when enquiry is made as to the health of the other members of the household and attention is directed to the means by which care is taken for the spread of the disease. The Council provide leaflets dealing with the subject, also expectoration cups free of charge. In one case only has a shelter been found possible and this the patient has had erected himself. Want of yard space has prevented this in the other cases. Spraying of the rooms with formaldehyde spray is done by the Nuisance Inspector."

BROMBOROUGH URBAN DISTRICT.—"In 1913 there was one death from pulmonary tuberculosis and none from any other tuberculous disease. The patient's death was practically coincident with the receipt of the notification intimating the existence of the disease. The premises were thoroughly disinfected. Notification was received of another lung case and of three persons suffering from other forms of tuberculosis. These latter were all in hospital under treatment. No arrangements have as yet been made for the detection of unrecognised cases of tuberculosis associated with notified cases of the disease and any work of this description which may be carried out is in the hands of the private medical advisers of the sufferers. Premises which have been occupied by tuberculous persons are thoroughly disinfected upon death or removal."

CHEADLE AND GATLEY URBAN DISTRICT.—"During 1913 eleven cases of pulmonary tuberculosis were notified and in two cases were notified twice. One of these cases occurred at the Royal Lunatic Hospital, making ten cases for the district proper, as compared with 22 in 1912. Thirteen cases of other tubercular diseases were notified, of which one occurred at the Warehousemen and Clerks' Schools.

"In each case of pulmonary tuberculosis the house has been visited and full enquiries made and when necessary advice has been given. Three cases have been sent to sanatoria and one case was to go but could not avail himself of it, as he was too ill. One case was brought into the district in the very last stages of the disease and died after being here a week. Your Council as yet has done nothing in the matter of providing shelters or sputum pots, but do provide disinfectants, which are very freely used.

"Of the 13 notifications of other tuberculous diseases—one case being notified twice—one of these occurred at the Warehousemen and Clerks' Schools. Of the cases belonging to the district proper:—

"In six cases glands of the neck were affected; in two

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cases the meninges ; in two cases the skin ; in one case the knee ; in one case the head and leg.

“In the case of the Warehousemen and Clerks’ Schools the glands of the neck were affected.

“In December, 1911, I was directed to report on the sanatorium and hospital accommodation provided by the Sanitary Authority for early, intermediate and advanced cases of phthisis. None has been provided, nor has your Council reserved any beds in a sanatorium for cases of phthisis. As far as I know there is no suitable building in the district for treatment of phthisis. Several patients from the district attend the Manchester Consumptive Hospital and from there are sent to sanatoria. The Board of Guardians have erected at their Stepping Hill Hospital, Stockport, a pavilion for patients under the Poor Law.”

ELLESMERE PORT AND WHITBY URBAN DISTRICT.—“Eleven persons belonging to Ellesmere Port died from tuberculous diseases in 1913. Six died from tubercle of the lungs, three from tubercle of the coverings of the brain and two from tubercle of other organs. In 1912 there were 15 deaths, in 1911 there were 12 and in 1910 14 from the same cause. Notifications were received of 41 new cases, viz., 26 pulmonary and 15 ‘other.’ Institutional treatment will be provided by the County Authority at an early date, but at the present time the only provision available is a number of beds rented in already established sanatoria in different parts of the country. Twelve cases were treated in sanatoria or other hospitals. Owing to the overcrowded state of the town the environment of these patients is unsatisfactory. Literature has been distributed drawing the attention of the inhabitants to the infectivity of tuberculosis and as it is proposed that a sub-dispensary be established in Ellesmere Port a more vigorous campaign will be organised. There has been no systematic attempt to search out ‘contacts,’ as up to the present time the services of the tuberculosis officer and nurses have not been available. Out of the ten specimens of expectoration submitted to the Clinical Research Association for the detection of tubercle bacilli, all were found negative”

HALE URBAN DISTRICT.—“Four deaths from tuberculous diseases were registered during the year. Of these three were from phthisis and one from spinal caries. During 1912 five deaths occurred from tuberculous diseases. The death-rate for phthisis for the year was .323 per thousand living and for other tuberculous diseases .107, making a total of .440, compared with .584 for 1912.

"As heretofore, provision is made by the Council for the examination, free of charge, of sputa and discharges suspected of tubercle bacilli. Under this provision, ten specimens were submitted for examination, two were positive and eight negative.

"Twelve cases of phthisis were notified during the year. These were all visited on notification and 15 subsequent visits have been made. At such visits advice is given with a view to preventing further infection and enquiries are also made to ascertain whether this may have taken place. Wherever a case ends fatally, or where a case 'removes,' the premises are disinfected as in other infectious diseases. This district, as part of the Bucklow Joint Hospital Board, has the use, I believe, of ten beds at the Baguley Sanatorium. One case during the year was recommended for treatment there."

HANDFORTH URBAN DISTRICT.—"Three cases of tuberculosis were notified—one of pulmonary tuberculosis, one of tuberculosis of bone and one of tuberculosis of the skin. Any cases of tuberculosis are regularly visited and instructed as to the means and precautions they should take. The services of the district nurse are utilised whenever needed."

HAZEL GROVE AND BRAMHALL URBAN DISTRICT.—"Fifteen cases of pulmonary and 12 of other forms have been reported.

"This matter is receiving our careful consideration and attention, each house being inspected on report and dealt with."

HOLLINGWORTH URBAN DISTRICT.—"Only one death from tuberculous diseases was registered and that was a case of pulmonary tuberculosis. There were two cases reported to me according to the recent regulations, viz. :—

Tubercular Glands of the Neck...	...	...	1
Pulmonary Tuberculosis	...	...	1

"I visited and inspected the homes in each case and laid down the ordinary general rules. The pulmonary case has now been removed to a sanatorium."

HOOLE URBAN DISTRICT.—"There were 13 cases of pulmonary tuberculosis notified during the year, four of tuberculosis of the glands of the neck and one of the hip joint and bones. Of the 13 notified three died. In every case the patient's house was visited and re-visited, full particulars were obtained and recorded, verbal advice as to general management was given and a card of printed

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instructions left. Sputum flasks, paper handkerchiefs and disinfectants were also supplied. Altogether there were five deaths from pulmonary tuberculosis recorded during the year; in each case the rooms were fumigated with formalin vapour and the bedding and all contaminated articles of clothing were destroyed. Notices also were served upon the owners to strip, lime-wash and re-paper the walls of infected rooms and to clean down the rest of the house, all of which notices were complied with. Five cases received institutional treatment, one an adult female, being admitted to the Chester Isolation Hospital and maintained there for a period of 12 weeks at the Council's expense.

"No special sanatorium accommodation has been provided as yet by the Council, inasmuch as this matter is being taken up by the County Council. The only accommodation within the district for the hospital treatment of cases is in the Chester Union Hospital, where there are two wards set aside for that purpose, one for males and the other for females and two day rooms. One of the notified cases, an infant of 16 months, was an inmate for a period of six months and received beneficial treatment there."

HOYLAKE AND WEST KIRBY URBAN DISTRICT.—"Twenty-one cases of pulmonary and 25 of other forms of tuberculosis were notified, most of whom were visited by me, but in a number of instances the notifying practitioner requested that no visit should be paid. The sanitary circumstances of every case were known. Up to the present time there are no arrangements for searching out unrecognised cases associated with notified patients, but the County Council scheme for this work is under discussion. In every case of death from pulmonary or other form of tuberculosis the premises were thoroughly disinfected."

KNUTSFORD URBAN DISTRICT.—"The year commenced with 11 cases of phthisis on the register, besides one in the workhouse. Two died during the year. Eleven more cases were notified (two in the workhouse) and seven cases of other forms of tuberculosis (four in the workhouse). One phthisis case and two 'other' cases have died, leaving 17 phthisis cases in the town and three in the workhouse and one case of other tuberculosis in the town and four in the workhouse. (The case in the town was wrongly diagnosed and may be eliminated). Excluding all cases in the workhouse, I therefore have 17 cases of phthisis on the register to be supervised. Of these three are in a social position, which renders my supervision unnecessary and two (it is hoped) are cured. The remaining 12 do not include more than one acute case and are visited occasionally. As stated before in this volume

I have conscientiously considered that this work devolved upon myself and I have (equally conscientiously) carried it out personally. I have made no search for unrecognised cases. I sent one case into the Baguley Sanatorium and two others were sent into other sanatoria by the County Insurance Committee."

LYMM URBAN DISTRICT.—"In 1913 nine cases of tuberculosis of the lungs (phthisis or consumption) were notified. Another road to sanatorium treatment has been opened up for us this year through the Medical Officer of Health of our County for State Insurance cases, of which advantage was taken for two cases. The County also will provide shelters for suitable cases and the Urban District Council has by resolution agreed to find storage for these shelters when not in use. To repeat again and it cannot be too often repeated, consumption is an infectious disease and, like diphtheria, depends upon two things, a *living germ*, which can ultimately only be derived from a previous case in man or beast and a recipient of less than normal resistance and these facts apply with very special power to consumption. Now, if your case taken fairly early can be 'cured' by sanatorium treatment, you are doing two very important things. You are isolating completely a fertile source of infection for a time and then returning him no longer a danger to his friends; for 'cured' means, I take it, that there are no longer any bacilli or infective living organisms given out by him when he coughs and so forth. So that sanatorium treatment, by providing that isolation which cannot be afforded in the smaller private houses and not always is provided even in larger ones, is a strong preventive measure, both in that it isolates and cures. Cure is an important part of prevention.

"Although perhaps this is not the place to mention it, I should like to see something more done for those who, being poor, are too ill for sanatorium treatment to be of any advantage to themselves, or who, after being treated in a sanatorium, come out only soon to relapse again on returning to their former life. For, granted that the resistance may be temporarily raised after sanatorium treatment, if the patient return to habits, employment and surroundings that lower his resistance, he will find the bacilli ever ready to invade his susceptible lungs and I believe all his life he will have to live so as to keep up his resistance as high as possible and avoid conditions, places and habits where he may get a larger dose of the poison than others can resist successfully.

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"Perhaps the noble charity which has founded and endowed our hospitals and convalescent homes, together with the progressive sanitary legislation of to day, could also do something to find suitable occupation and environment for selected cases of cured consumptives and, what is even more urgently needed, provide permanent hospital accommodation and comfort—free from the stigma of public pauperism—for those 'too far advanced' cases doomed to drift in acute poverty more or less slowly to their end, an insupportable burden to themselves and friends and a pregnant source of danger to society. For by keeping the ones cured and the others isolated how much could be done to stamp out consumption completely and relieve the very often undeserved sufferings of so many of our fellows."

MOTTRAM URBAN DISTRICT.—"Three cases of pulmonary and three cases of non-pulmonary tuberculosis have been notified during the year.

"Pulmonary Tuberculosis.—These cases were under my own care and visited regularly. When the case was diagnosed the danger of infecting other members of the household was pointed out to the parents. Sputum flasks were recommended, also a special set of household utensils was advised. One of the cases came from Manchester on the advice of his doctor. He had previously been in a sanatorium for seven months. The other two cases were residents in the village, one proving fatal and the other waiting for admission to a sanatorium. Domiciliary treatment was recommended by the Tuberculosis Officer to the County, but, as I pointed out, such treatment is most unsatisfactory, as the patient cannot be kept under constant control and instead of doing as he is told has his own way in spite of all orders. There is no Tuberculosis Dispensary in the district.

"Non-pulmonary Tuberculosis.—These were cases of hip joint disease—lupus and glands. One case is being treated privately and the other two are attending hospitals in Manchester.

"Measures of Cleansing and Disinfection.—Antiseptics are supplied by the Local Authority and on the termination of the case the house is thoroughly disinfected.

"I should like to point out to property owners the expense they incur by letting their houses to people suffering from tuberculosis. The tubercular germ is most difficult to kill and when the patient moves from room to room the whole house

becomes infected. It is therefore necessary, on the removal of the patient, by death or otherwise, that the house should be thoroughly disinfected - all the paper taken off the walls, which should be whitewashed or duresoed and no paper put on for twelve months. If this course is neglected the subsequent tenants may contract the disease. It is only by such precautions that the disease can be stamped out."

NANTWICH URBAN DISTRICT. "Sixteen notifications of pulmonary tuberculosis were received. The deaths registered number ten, five males and five females.

"The following measures are at our disposal here for dealing with tuberculosis cases: (1) compulsory notification, so that the Medical Officer of Health and Sanitary Inspector may visit and re-visit notified cases; (2) the distribution of printed instructions to each case; (3) Sputum flasks and disinfectants are provided free of charge; (4) the examination of sputum for tubercle bacilli at Public Health Laboratory, Manchester, free of charge; (5) the disinfection of infected rooms, bedding, clothing, &c.

"Five cases of phthisis were sent to sanatoria: one each to Painswick, Bowdon, Stroud, Macclesfield and one to a Yorkshire Sanatorium. Most of the cases sent to sanatoria benefited by the treatment, but the periods for which they are kept in these institutions is so short that although the disease is arrested the patient usually relapses again on returning home, where he or she has to live under less favourable conditions. The cases which are sent to sanatoria are of course only those who claim benefits under the Insurance Act. Others less fortunate, have no provision made for their treatment in institutions.

"So far as I know no definite arrangement has been made in the County for the provision of public sanatoria, but a complete scheme for providing dispensaries, etc., is soon to come before the County Council for final approval and will, it is expected, be put into operation at an early date. We are not likely to see any great good resulting from the compulsory notification of phthisis until provision is made for the treatment of early cases in sanatoria and for the isolation of advanced cases, which are such a source of danger to others in the same house. If the public only realise that this disease in its early stages is a curable one, much good will result and there will be less fear of consulting a medical man when the disease is suspected. I think that they are at last beginning to realise the danger of infection from the

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dried expectoration of consumptive persons. I am pleased to know that the question of providing accommodation at the Alvaston Hospital for a limited number of consumptive patients is now engaging the attention of the Joint Hospital Board.

“Six notifications of localised tuberculosis were received, affecting glands of neck, finger, ankle, sternum, spinal column and abdomen.”

NESTON AND PARKGATE URBAN DISTRICT.—“The map of Cheshire, published in the Annual Report of the County Medical Officer, shows Neston and Parkgate as one of the ‘black spots’ in relation to tuberculosis, as evidenced by the average mortality from that disease in the years 1908—1912. In 1913 there were 10 deaths from tuberculous disease and 39 cases were notified. The 16 cases of types of tuberculosis other than pulmonary were—nine glandular affections, three tuberculous peritonitis, one joint affection, one spinal trouble, two meningeal affections.

“Six of the patients suffering from pulmonary tuberculosis were offered sanatorium treatment, but refused to accept it. Two glandular cases received treatment in general hospitals. One joint case was discharged from a general hospital as incurable. Two pulmonary cases were treated at the Clatterbridge Sanatorium (Poor Law), where one remains and the other was discharged with the disease quiescent. One case of pulmonary tuberculosis treated in a Sanatorium at Wallasey was discharged practically unimproved and the lessons which should have been learned in the sanatorium with reference to open air are ignored, if one can judge from the closed windows of the sickroom. Too much stress must not be laid on the number of cases notified, for the attitude of practitioners towards notification varies considerably, as evidenced by a patient seen by two practitioners independently in the same week, when one notified him as a case of pulmonary tuberculosis and the other, having had a specimen of expectoration examined and found free from tubercle bacilli, treated him as a case of bronchitis. Again, in glandular cases some trivial enlargements are put down as tuberculous in origin and go to swell the statistics to a formidable number.

“Of the deaths which occurred from tuberculosis in 1913, two were in illness of so rapid a character that the intimation of death and notification of the disease were received at the same time. Three of the five deaths recorded took place in the Clatterbridge Sanatorium and one in the County Asylum.

"The patients are visited by me after communicating with the medical adviser, and are visited from time to time. No examinations of patients have been made except on the request of, or with the consent of, the attending practitioner. Systematic subsequent visits have not been attempted, but all the patients have been under constant review. Contacts have not been examined in any house on behalf of the Sanitary Authority and this is work which cannot be attempted until either the Tuberculosis Officers of the County undertake the duty or someone is authorised to carry it out. Proposals have been made to include Neston in a Wallasey dispensary scheme, but the plan is unworkable and has not been persisted in. No systematic periodic disinfection has been carried out, but after deaths and removals formalin has been freely used."

NORTHWICH URBAN DISTRICT.—"There have been 26 cases of phthisis notified and 11 cases of tubercular diseases other than phthisis notified during the year. There were 20 deaths registered from tubercular diseases during the same period. All cases are visited by the health visitor unless the notifying practitioner requests otherwise and if attainable a separate bedroom is advised with instructions as to destruction of sputum, &c. Repeat visits are made when they can be done unostentatiously. Two cases, father and child from one house, where isolation was utterly impossible, were treated in the old infectious disease hospital at Wade Brook for upwards of six months, after which the man refused to remain and the two invalids returned home in a very much better state of health than when admitted into the hospital, particularly the child. Disinfectants are supplied to all cases and the premises disinfected after death or removal. During the year 45 inspections of patients' houses have been made and seven disinfected."

RUNCORN URBAN DISTRICT.—"Twenty deaths from phthisis were registered during the year. Thirteen deaths from this source were registered during the preceding year; notwithstanding what is being done to check the inroads of this very fatal disease, the death-rate seems to be on the increase. Persons who have to nurse and persons who have to come in contact with sufferers from this disease, should be very careful to see that no expectoration is allowed on bedroom floors, or indeed anywhere except in pocket spittoons, properly protected with some antiseptic. The dirty habit of spitting on floors or on the public highway should be discouraged in every possible way by every person, for flies feed on sputum and then feed on anything else that takes their fancy—bread, butter, cheese, sugar and the like and unfortunately, when the

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sputum becomes dry and gets mixed up with the air, the tuberculous bacilli becomes very active and danger follows. The victim of tuberculous lungs ought to be warned against swallowing the poisonous phlegm, whether in the home or on the highway and the highway should not at any time become a public spittoon."

SANDBACH URBAN DISTRICT.—"There have been three deaths from phthisis. This class of case has chiefly been among the persons insured under the Act and cases as they are diagnosed and verified by examination of sputum for bacilli are recommended for sanatoria treatment if suitable, or, if not, for treatment at home. Two cases were sent from here to sanatoria and, I believe, although not cured, were greatly benefited and received instructions which cannot but be beneficial to members of the same family and those coming in contact with them. The poor I take into Arclid Infirmary, where they are treated on sanatorium lines. The other than poor and insured are visited periodically, provided with instructions, disinfectants and sputum flasks."

SALE URBAN DISTRICT.—"There were 34 cases of tuberculosis of the lungs and seven cases of tubercular disease of other parts of the body reported during the year. Most of these cases received sanatorium, hospital or other treatment and several cases recovered. There were 11 deaths from tubercular disease registered during the year. The homes of the patients were visited and instructions and advice given as to the destruction of sputum, sleeping alone and other matters. The houses were promptly and effectually disinfected where a consumptive patient had died."

TARPORLEY URBAN DISTRICT.—"Two cases of pulmonary tuberculosis were notified during 1913. These were visited, cards of instructions were left, together with sputum flask, disinfectants and fumigating material, etc. The parish nurse visits cases when required. There is no sanatorium or hospital accommodation in your district for phthisis patients."

WILMSLOW URBAN DISTRICT.—"Eight cases of pulmonary tuberculosis and eight of other forms of tuberculosis were notified. One case of pulmonary tuberculosis was removed to the Baguley Sanatorium. Sixteen visits were made on receipt of primary notification. Sixteen subsequent visits were made. Enquiries were made as to the existence of earlier unrecognised cases of tuberculosis in association with the notified cases. No arrangements were made or proposed for utilising the services of The tuberculosis Officer or

nurses for the detection of such unrecognised cases. Measures of disinfection were carried out."

WINSFORD URBAN DISTRICT—"Seven cases of phthisis were on the register at the beginning of the year, 11 were notified during the year and eight of other forms of tuberculosis. The seven old cases all survive, two being much improved. Of the 11 new cases, two died and one left the district. One is improving. Three have received sanatorium treatment from the County Insurance Committee. There remain on the register at the end of the year 15 cases of phthisis and five of other tuberculosis: two of the latter, of the eight notified, having died and one turning out to be wrong diagnosis. This seems to be a very modest number. Every case was visited by myself at the earliest convenient moment. Subsequent visits have been made by myself, according to the severity of the case and the accessibility of the residence. No arrangements have been made for the detection of other cases, beyond the free supply of 'outfits' to the local medical men. No arrangements as to tuberculosis officer or nurses."

BUCKLOW RURAL DISTRICT.—"Twenty-three cases of phthisis were carried forward from 1912, nine of which were either convalescent or for other satisfactory reasons were not in need of supervision. I have certainly been surprised to find 28 further notifications in 1913, besides 15 of other forms of tuberculosis. This makes a total of 66. Fourteen cases have died, four have left the district and 15 are not in need of supervision. This leaves on the active list 33 cases (24 phthisis, nine other forms of tuberculosis). Nine phthisis cases are in Dunham Massey, six in Timperley, one in Baguley, four in Northenden, one in Northen Etchells, one in Styal, one in High Legh, one in Warburton. The other cases are lupus of face (two), cervical glands (three) and various bones (four). Two are in Dunham Massey, one in Timperley, one in Northen Etchells, one in Ollerton, one in Mere, one in Rostherne, two in Partington. There are still 18 townships without a case of any kind, whilst seven have only one case each and two only two cases each.

"All cases are under my personal observation. Cards of instructions are supplied, also disinfectants if asked for. Every case is under medical supervision. Ten cases went to sanatoria. The medical attendants are usually careful to watch for further cases; nothing is done by the health department (*i.e.* myself) for obvious reasons. A County Tuberculosis Officer has been appointed and a scheme is in process of evolution. How far a District Council or its officers will 'participate' in such scheme

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remains for the future to disclose. The action now being taken promises to stamp out this disease within a few years so far as the Bucklow Rural District is concerned."

CHESTER RURAL DISTRICT.—"There were 19 cases of pulmonary tuberculosis notified during 1913 and 11 other tuberculous disease. Every care is used to prevent the spread of infection under the Public Health Tuberculosis Regulations, 1912. There is no sanatorium or hospital accommodation in your district for phthisis patients other than the Workhouse Hospital but cases may be admitted into the Kingswood Sanatorium, Delamere Forest, which is just over your boundary."

CONGLETON RURAL DISTRICT.—"The prevention of tuberculosis is being efficiently carried out; every case is visited and instructions given as to the best means of preventing the spread of infection. Pamphlets are left to guide the patients to this end, sputum flasks provided, disinfectants given when required and the premises disinfected when the patient is removed to a sanatorium or on the death of any patient of this complaint. The hut has been in use and is much appreciated. I have not thought it necessary to get another hut, though if I thought it wanted I should advise the Council to get one."

DISLEY RURAL DISTRICT.—"Eleven cases of tuberculosis have been notified. There were two deaths from phthisis, one occurring in the district, the other in a neighbouring district. The death-rate per 1,000 from phthisis is .67. Most of the cases of phthisis pulmonalis have been visited by the Medical Officer of Health. No arrangements have been made for the detection of unrecognised cases of tuberculosis associated with notified cases of the disease. No nurse has been appointed for the above purposes. Cleansing and disinfection are carried out at death. The sanitary condition of patients' houses has been investigated and in most cases was satisfactory. Circulars on the hygienic aspect and treatment of the disease were distributed to the cases of phthisis visited and advice given *re* the disposal of expectoration. Shelters, sputum flasks, &c., have not been provided."

MACCLESFIELD RURAL DISTRICT.—"Five cases of the pulmonary form of this disease were notified during the year—four males and one female—and since the coming into operation on the 1st February, 1913, of the Tuberculosis Regulations of 19th December, 1912, nine cases—six males and three females—of non-pulmonary tuberculosis have been notified.

Of the latter the parts affected in each case were:—appendix and mesenteric glands one; elbow joint one; glands of the neck four; ischio-rectal fossa one; pelvis one; spine one. Four of these had been under treatment in hospital and had practically recovered from their illness at the time of inspection. One case of pulmonary tuberculosis and one of the non-pulmonary variety were in persons belonging to other places, who had taken up their residence in this district on account of their condition.

“Each of these cases has been investigated by myself on receipt of the primary notifications, subsequent visits being paid were found necessary. Printed and verbal instructions have been given as to the means to be used to prevent the spread of the infection. In each case of the pulmonary disease the patient was occupying a separate bedroom and was exercising due care in the destruction of the sputum. The arrangements for the detection of unrecognised cases and for the utilization of the Tuberculosis Officer or nurses have so far been left to the County Council Authorities, who are also concerned in provision of sanatoria and dispensaries.

“Disinfectants are supplied by the Rural District Council, but no provision is made for the supply of sputum flasks, paper pocket handkerchiefs, extra nutriment, &c. During the year a resolution was passed by the Council empowering me to buy a movable shelter suitable for cases of tuberculosis. Owing to the difficulty of storage when not in use and to the fact that in none of the cases notified was a shelter considered desirable, this has not yet been purchased; but it will be immediately provided, should the necessity arise for its use. It may be pointed out that the experience of neighbouring districts, where such shelters have been provided, has shown that a careful discrimination in the selection of cases is extremely necessary and that where no provision is made for the proper nursing of these cases the patients are liable to suffer rather than benefit from the treatment.”

SOUTH AND WEST CHESHIRE DISTRICTS.—“On receipt of the notification the home of the patient is visited and enquiries made into the condition of the house, sanitary arrangements, sleeping accommodation, ventilation, dampness, &c., a card of instructions is left, together with a sputum cup and disinfectant and the house is disinfected every three months if the patient is treated at home, or after the patient is removed or dies, strict injunctions are left with each patient to sleep alone

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with windows open, use separate utensils for food and to burn all sputum."

NANTWICH RURAL DISTRICT.—"Ten deaths of residents of the Rural District were ascribed to pulmonary tuberculosis (consumption of the lungs). This is eight fewer than in 1912. It is equivalent to a death-rate of 0.39 per 1,000 living. The rates for the preceding ten years were: 0.38, 0.3, 0.6, 0.8, 0.7, 0.3, 0.5, 0.49, 0.6 and 0.7. The rate is a low one but is to a very large extent a preventable one. Five cases of tubercular meningitis and two cases of bone and joint tuberculosis occur in the mortality returns. All these deaths occurred in young children.

"Twenty-four cases of pulmonary tuberculosis were notified during the year. Of these fifteen were males and nine were females. The cases were visited and they were supplied with a spit-cup and disinfectants for indoor use and a pocket spittoon for outdoor use. They were advised verbally as to the precautions necessary for their own safety and for that of others. Printed papers of instruction were given to them. Bedding and bedrooms were disinfected after the death of a case or its removal to a sanatorium. I received six notifications of admission to sanatoria and three notifications of discharge from sanatoria. The removed cases in almost every instance were improved by their stay at a sanatorium, but in my opinion their stay was altogether too short to effect a cure and on their return to ordinary home surroundings they appeared, with one exception, to relapse. One case would appear to be completely arrested. Some of the cases sent to sanatoria appeared to me to be too far advanced for successful treatment. Notification of admission to sanatoria was not always sent to me. In one case it was only by accident that I found that the man had gone and so was able to have the premises disinfected.

"I must again call attention to the real necessity for some place other than the Union Infirmary in which cases too far advanced for ordinary sanatorium treatment or whose home surroundings are such as render their treatment at home highly dangerous to the other members of the household (which is usually the case in a cottage home) could be treated at no great distance from their friends. Such an institution could readily be set up at the Nantwich Isolation Hospital. There is ample ground of a suitable character adjoining the hospital and belonging to the Board. A scheme for such provision for

fourteen patients has been drawn up by the Joint Hospital Board and has been submitted to the County Council. At present it would appear to be hung up in the offices of the County Council. I am more than ever convinced that the way to prevent consumption is to isolate the advanced cases which are so commonly responsible for handing on the infection to other members of their household. Large sums of money are being spent in the hospital treatment of the ordinary infectious diseases which cause but a small mortality; then why not spend a little more and stamp out this great scourge, 'consumption'? It would be a great hardship to send these poor advanced cases right away from their friends and relatives. But in an institution such as I desire to see set up there would be no such hardship, for the patients could be regularly visited under proper precautions and as frequently as could be desired. I believe also that many of the cases could be really greatly improved and their lives prolonged. At any rate their influence as the progenitors of other cases of the disease would be removed from the community.

"Sixteen cases of other forms of tuberculosis were notified during the year. They included cases of tubercular meningitis, tuberculosis of bones, joints, skin and lymphatic glands. Four of the cases were treated in hospital. I am convinced from personal observation that many cases belonging to this class are not notified, especially cases of tuberculosis of lymphatic glands.

"I have been surprised at the small amount of friction which has arisen as a consequence of the compulsory notification of tuberculosis. It was always thought that such notification would cause great resentment. On the contrary I find that the patients appear to be heartily glad of advice and help and by no means resent notification. I am equally convinced that they would welcome hospital treatment if such were available of a proper kind. It is not fitting that insured persons who have a right to sanatorium treatment should be compelled, as I know at present they are sometimes compelled, to seek refuge in the workhouse."

NORTHWICH RURAL DISTRICT.—"There were 30 notifications of tuberculosis, 20 being phthisis and 10 being tubercle of organs other than the lungs. The number of deaths registered from phthisis was 14, while five were from other tubercular diseases. On receipt of notification, unless otherwise requested, each case is visited and verbal instructions as to isolation, sputum

TUBERCULOSIS.

destruction, etc., is given; disinfectants are supplied and each house disinfected when requested and after death. No shelters have been provided by the Sanitary Authority, but in a case occurring in an overcrowded house, arrangements were made for the house to be occupied by the patient only with her mother as nurse; this was carried on from the notification till death occurred after a short time."

TARVIN RURAL DISTRICT.--"There were eight cases of pulmonary tuberculosis notified during 1913. There were sanitary inspections of patients' houses and disinfections done. Printed forms, fumigating material, disinfectants and sputum flasks are issued in your district as well as the districts of Tarporley, Chester Rural District and Malpas Rural District, to all consumptive patients notified, advising them how to live hygienically and prevent further infection in others. There is no sanatorium or hospital accommodation in your district for phthisis patients."

TINTWISTLE RURAL DISTRICT.--"Two cases of pulmonary and one of non-pulmonary tuberculosis have been reported during the year.

"Pulmonary tuberculosis.--One case situated in the Matley portion of your district was of a very acute nature and soon proved fatal. The other case is in Hattersley and every precaution is being taken to prevent the spread of the disease. A chronic case which had been under sanatorium treatment died in Hattersley. There is no sanatorium or tuberculosis dispensary in the district. One case of tubercular disease of the spine was reported.

"Antiseptics are supplied by the Local Authority and on the termination of the case the house is thoroughly disinfected. I should like to point out to property owners the expense they incur by letting their houses to people suffering from tuberculosis. The tubercular germ is most difficult to kill and when the patient moves from room to room the whole house becomes infected. It is therefore necessary on the removal of the patient by death or otherwise that the house should be thoroughly disinfected, all the paper taken off the walls, which should be whitewashed or duresced and no paper put on for twelve months. If this course is neglected the subsequent tenant may contract the disease. It is only by such careful measures that the disease can be stamped out."

TUBERCULOSIS—ISOLATION HOSPITALS.

WIRRAL RURAL DISTRICT.—“Fifty-six cases of tuberculosis were notified of which 34 were pulmonary and 22 other forms. It must not be deduced from the number of notifications of tuberculosis in Wirral that this disease is especially common there; the contrary is the fact and all over Wirral one meets with people who have had ill health in the towns and have sought to recuperate by taking up their residence in the country. Among the cases notified there are persons who were sent into Wirral years ago by their town doctors and who apparently have only recently had to seek local medical advice. Two cases, one belonging to China and the other to Canada, are living in a Wirral village to receive medical treatment. Some of the cases of ‘other tuberculosis’ are merely instances of glandular enlargement and the tubercle bacillus may or may not be the causal agent. Every case is visited where the exact sanitary circumstances under which the patient is living are not known, but no examination of members of the family who are ‘contacts’ has been made. Disinfection of the premises is carried out after every death from tuberculosis. No arrangements have as yet been made for utilising the services of the Tuberculosis Officer for the County and no approved scheme has been produced.”

Section VI.—Isolation Hospitals, &c.

The Administrative County is well provided with Isolation and Small-pox Hospitals. A complete list of these was given in my Annual Report for 1910 and a note is contained in Table III., at the end of this Report, of the accommodation provided in or available for the several districts in the County. That they are fully utilised by the majority of the districts is evidenced by the following figures shewing the number of cases of those diseases which are usually treated in such hospitals which were notified and the number of such cases which were actually removed to hospital for treatment:—

	Cases Notified.	Cases Removed to Hospital.
Small-pox	1	1
Scarlet Fever	1,458	848
Typhoid Fever	153	65
Diphtheria	963	594

There are a few districts in which I am not satisfied with the provision the Councils have made in the matter of isolation and small-pox hospital accommodation,

ISOLATION HOSPITALS.

I am making enquiries into this matter with particular reference to certain districts in the north-east and south-west of the County and hope to make some recommendations for the consideration of your Council at an early date.

I append some statements of the District Medical Officers of Health on this matter.

CREWE MUNICIPAL BOROUGH -- "*Small-pox Hospital.*—The original premises provide accommodation for the caretaker and his family, two bedrooms for patients and two suitable rooms for a nurse. In 1903 a small galvanised iron pavilion was fitted up in the farm yard and in this there are two commodious wards. There are 12 beds. The hospital has not been occupied during the year, but has been kept ready for any emergency.

"*Isolation Hospital.*—This hospital has been in use since October 16th, 1897 and was erected at a cost of £9,500 (cost of site included).

"Owing to the rapid growth of the population and the increasing number of patients treated it was found necessary to enlarge the hospital. The additions commenced in 1903, were ready for occupation by March 30th, 1904 and comprised a diphtheria pavilion, two wards and two private rooms and administrative accommodation. The cost of these extensions was £3,066.

"In 1909 a revolving open-air shelter was erected for the treatment of pulmonary tuberculosis, at a cost of £46 10s. 4d. (exclusive of beds).

"The accommodation is now 42 beds, distributed as follows.—Typhoid pavilion, 10 beds; scarlet pavilion, 16 beds; diphtheria pavilion, 12 beds; observation block, two beds; open-air shelter, two beds.

"The full hospital staff consists of the matron, nine nurses (one sister, two staff, four assistant and three probationer nurses) and six maids (cook, housemaid, scullery maid, two ward maids and laundry maid. There is a non-resident ambulance attendant, who also acts as disinfecter for the health department, a porter and a gardener. Occasional extra assistance has to be obtained in the laundry.

“The cases admitted during 1913 were :—

Scarlet fever ..	...	...	70
Diphtheria ...	...	...	137
Enteric fever...	...	...	2
Pulmonary tuberculosis	4
Puerperal fever	3
German measles	3
Erysipelas	3
Laryngitis	2

Total	224
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“The cost of maintenance per case, the average daily number of patients and their average residence, etc., since the opening of the hospital, are shewn in the following table :—

Year.	PATIENTS.			Total Expenditure	Average cost per patient.			Daily cost per head for provisions	Provisions.		
	Total admitt- ed.	Average daily number.	Average residence in days.		£	s.	d.		£	s.	d.
1898	68	9.1	48.0	1020 2 0	15	0	0	2 4	378	19	6
1899	73	9.6	48.0	1083 7 1	14	16	9	1 11 ¹ / ₂	347	4	9
1900	158	20.3	47.0	1161 11 8	7	7	0	1 1 ¹ / ₂	417	19	0
1901	129	17.0	48.0	1367 0 10	10	12	0	1 5 ¹ / ₂	452	18	0
1902	102	11.7	42.0	1173 5 9	11	10	0	1 5 ¹ / ₂	314	10	7
1903	169	22.4	48.5	1404 6 7	8	6	2	0 11 ¹ / ₂	398	19	7
1904	238	34.2	42.0	1642 14 3	5	10	3	0 10 ¹ / ₂	561	2	4
1905	160	16.7	38.5	1592 0 3	9	19	0	1 7 ¹ / ₄	488	16	2
1906	141	16.0	41.6	1408 12 9	9	19	9	1 3 ¹ / ₄	384	15	8
1907	420	38.8	32.7	1893 9 1	4	10	1	0 10 ¹ / ₂	601	8	3
1908	285	31.3	41.1	2182 12 9	7	13	1	1 1 ¹ / ₂	661	16	7
1909	254	25.6	36.8	1779 18 11	7	0	1	0 11 ¹ / ₂	450	13	10
1910	401	36.6	35.1	1907 2 9	4	15	1	0 9 ¹ / ₂	523	6	7
1911	326	33.0	37.5	1845 13 1	5	13	2	0 9 ¹ / ₂	494	5	11
1912	202	23.0	38.8	1737 9 1	8	12	1	1 0 ¹ / ₂	444	11	1
1913	224	20.2	35.5	1722 17 9	7	13	9	1 1 ¹ / ₄	403	1	1

N.B.—The above calculations of cost do not include repayment of principal, nor payment of interest on capital.

“The average length of stay in hospital was as under :—

Scarlet fever patients ... ..	...	...	...	45.8 days
Diphtheria and membranous croup patients, ex- cluding cases which died ... ..	...	...	...	32.2 „
Diphtheria and membranous croup patients, in- cluding cases which died ... ..	...	...	...	31.0 „
Enteric fever patients ... ..	...	...	...	49.0 „
Erysipelas patients ... ..	...	...	...	23.0 „
Pulmonary tuberculosis patients ... ..	...	...	...	70.5 „

ISOLATION HOSPITALS.

"The disinfection of bedding and clothing from infected houses and from the hospital wards is carried out in the Washington Lyon Disinfector. In addition to this, 88 sets of bedding from the cottage hospital, infected by septic discharges, were also dealt with, so that a considerable amount of preventative work has been carried out in this department."

DUKINFIELD MUNICIPAL BOROUGH.—"We have arrangements with the Hyde Hospital Authorities for four beds, two for small-pox and two for other infectious cases, but we have never had any difficulty in arranging for more cases to be admitted. The Hyde Fever Hospital has beds quite sufficient to allow of the treatment of all the infectious cases we are likely to send to hospital. All our small-pox cases are sent to hospital and other infectious cases are also sent at the discretion of the Sanitary Authority. Four cases of typhoid fever and one of scarlet fever were sent to hospital during the year. We use the disinfecting apparatus at the Hyde Hospital to disinfect bedding, clothing, &c. and the disinfecting baths there when required."

HYDE MUNICIPAL BOROUGH.—"One hundred and eleven cases of infectious diseases belonging to the borough have been isolated and treated in the Hyde Isolation Hospital during the year. Seventy-nine of these cases were scarlet fever, 22 diphtheria, nine enteric fever and one erysipelas.

"Cases received in hospital from outside districts :—

District.	Scarlet Fever.	Enteric Fever.	Diphtheria.	Puerperal Fever.
Compstall	3	1	0	0
Bredbury and Romiley...	6	1	6	0
Droylsden	9	0	1	0
Audenshaw	2	1	0	1
Dukinfield	1	4	1	0
Marple	2	0	3	0
Denton	15	3	5	0
New Mills	0	1	0	0

STALYBRIDGE MUNICIPAL BOROUGH.—"Unfortunately we are still without isolation hospital accommodation for infectious diseases other than smallpox. For smallpox we are sufficiently provided, along with the neighbouring Authorities of Ashton-under-Lyne, Hurst, Limehurst and Audenshaw, at Hartshead. The hospital proper is a corrugated iron building, containing two wards with 10 beds in each ward and with annexes for earth-closets and sinks and kitchen and bathroom. The old farm-house

adjoining the hospital has been adapted into an administration block for the matron and nurses and a cottage for a caretaker. Some outbuildings of the farm have been transformed so as to furnish a laundry, a disinfecting chamber with a Thresh's disinfecter, a storeroom, a dispensary and day-rooms and bedrooms for convalescents and nurses, with bathrooms and W.C. A mortuary with two slabs is provided well away from the hospital.

"The water supply is derived from the surrounding land and collected in two large tanks, from which it is conveyed by galvanised iron service pipes. The water has been analysed and declared quite fit for all domestic purposes.

"The site at Hartshead belonging to the Joint Smallpox Hospital Board is an extensive site comprising several plots and measuring in all some 40 acres and only a small portion of it is occupied by the smallpox hospital with its administration block and outbuildings and here, I maintain, is ample scope for the erection of other blocks, in which provision should be made for other infectious diseases, notably scarlet fever, diphtheria and typhoid fever.

"It has frequently been a matter of regret and of anxiety to me, when such cases have occurred in dwellings where anything approaching isolation was altogether unattainable, or where it was impossible to check the popping in and out of inquisitive neighbours, that we were unable to have the patient removed to a hospital both for the benefit of the sufferer and for the protection of the public.

"On November 26th, 1908, at the Ashton-under-Lyne Town Hall, a Local Government Board Inquiry was held *re* the application of the Joint Smallpox Hospital Board to become a Joint Hospital Board with power 'to provide, maintain and manage hospital accommodation for the reception of cases and of infectious diseases, other than smallpox,' but the sanction of the Local Government Board to this application is withheld at present, as the Local Government Board desires to be satisfied that the buildings which the Joint Hospital Board contemplate erecting will be of a sufficiently substantial character for their exposed situation. With the object of minimising as much as possible the individual expenditure of the constituent authorities the Joint Hospital Board invited the co-operation in the scheme of other neighbouring authorities, but up to the present their appeal has not met with success. It is sincerely to be hoped that before long satisfactory arrangements will be made so that the scheme may be efficiently carried out.

ISOLATION HOSPITALS.

“The hospital has only been in use on the rare occasions when smallpox has happened to make its appearance in one or more of the districts of the Joint Hospital Board, so that the hospital has to be kept in order and in readiness for lengthy periods during which there are no patients to be admitted. The Local Government Board have therefore suggested that during such times the hospital might well be utilised as a sanatorium for those cases of pulmonary tuberculosis which are suitable for treatment in the open situation and the bracing atmosphere which the hospital affords. The Joint Hospital Board are quite agreeable to comply with this suggestion but are anxious also to obtain sanction to their using the hospital for infectious diseases other than smallpox or pulmonary tuberculosis as occasion may arise. No such sanction has as yet been obtained and the matter remains in abeyance and the hospital unfortunately cannot be made use of.”

ALDERLEY EDGE URBAN DISTRICT.—“Alderley Edge is one of the Councils forming the Bucklow Joint Hospital Board. Cases of scarlet fever, diphtheria, enteric fever and puerperal fever can be sent to the Manchester Corporation Isolation Hospital at Monsall and cases of smallpox to the same Corporation Isolation Hospital at Clayton. The patients are removed in a motor ambulance and bedding, etc., sent to the same institution for disinfection.”

ALTRINCHAM URBAN DISTRICT.—“The Sinderland Isolation Hospital, in Dunham Massey, was erected by the Council and opened in January, 1911, and provides for scarlet fever 20 beds, diphtheria five beds, typhoid fever five beds. There are also two observation wards and all the necessary buildings and plant for the disinfection or destruction of infected articles. A separate arrangement for smallpox cases has been made with the Manchester City Council, for the reception of cases from this district. The hospital has been in constant occupation during the year and 38 cases of scarlet fever, five cases of diphtheria and three cases of enteric fever have been treated. There were no deaths in the hospital during the year. An arrangement exists to receive cases from Bowdon Urban District and during the year four cases of scarlet fever and one case of typhoid fever were treated at the hospital.”

HIGHER BEBINGTON URBAN DISTRICT.—“The Wirral Joint Hospital Board (to the expenses of which you are a contributory body) supply the necessary isolation accommodation for infectious

diseases. The number of beds provided and the diseases treated are as follows :—

Greasby Hospital	...	8 beds, smallpox.
Clatterbridge Hospital	...	12 beds, diphtheria.
		6 beds, typhoid fever.
		40 beds, scarlet fever.
		2 beds, observation block.
Pensby	... ..	20 beds, convalescent scarlet.

“The contributions to the common fund of the Joint Hospital Board to 31st March in the years 1911–1913 and the number of patients treated were as follows :—

1911.	1912.	1913.
2 cases, £63 11s. 2d. ...	8 cases, £101 0s. 10d. ...	14 cases, £92 4s. 9d.”

LOWER BEBINGTON URBAN DISTRICT.—“The Wirral Joint Hospital Board (to the expenses of which you are a contributory body) supply the necessary isolation accommodation for infectious diseases. There has been no deficiency of accommodation for infectious diseases. A daily report is received by the Inspector at the Council Offices of the progress of patients in the hospital and a list is published on the notice board for the convenience of the parents of the children.

“The contributions to the common fund and numbers of patients treated in the Infectious Disease Hospitals from 1911–1913 were as follows :—

1911 (81 patients)	...	...	£603	19	2
1912 (64 patients)	...	...	805	14	0
1913 (33 patients)	...	...	782	1	2

“During the past year a large amount of bacteriological work has been done for the Joint Hospital Board at the Liverpool University Laboratory.”

BOLLINGTON URBAN DISTRICT.—“The same arrangements as in previous years hold good with the Council and the Borough of Macclesfield for the reception and treatment of cases of infectious diseases at the Isolation Hospital on the Moss. There are, at the disposal of the Urban District, two beds for cases of smallpox and four beds for other infectious diseases, such as enteric fever, scarlet fever and diphtheria. A retaining fee of £30 per annum is charged for the reservation of the two beds in the smallpox block and a further fee of £30 15s. 4d. per annum for the other four beds in the other wards. Patients' fees for treatment amount to £31 8s. 6d.”

ISOLATION HOSPITALS.

BROMBOROUGH URBAN DISTRICT.—“You provide hospital accommodation for acute infectious diseases by being one of the constituent authorities of the Wirral Joint Hospital Board. Bromborough Pool village has an infectious disease hospital of its own and one case was treated there.”

CHEADLE AND GATLEY URBAN DISTRICT.—“The Council in October, 1912, entered into arrangement with the Corporation of Manchester for retaining three beds at the Monsall Fever Hospital for cases of scarlet fever, diphtheria and enteric fever, as the Baguley Sanatorium has been converted into a sanatorium for consumptives. This has been sufficient so far for the needs of the district, as on several occasions where our beds were occupied urgent cases have been taken in by the courtesy of the medical superintendent. For cases of small-pox the Council has, jointly with the Heaton Norris Urban District Council, erected a temporary iron hospital for eight beds on the waste land near the sewage outfall works. Although quite ready for the reception of patients it has never been used. The Barnes Convalescent Hospital send all their cases to Monsall Fever Hospital. The Royal Lunatic Hospital send their cases to Monsall Fever Hospital, or if necessary they are isolated in one of their detached houses. The Warehousemen and Clerks' Schools have their own sanatorium for infectious disease. Their cases are sent also to Monsall Fever Hospital. Fifteen cases were sent in all to Monsall Fever Hospital, of which six were from the public institutions.”

COMPSTALL URBAN DISTRICT.—“The Council have an arrangement with the Hyde Corporation by which cases suffering from infectious diseases can be removed and treated at Hyde Isolation Hospital. This is sufficient for the district. Four cases of scarlet fever and one of typhoid were removed to the hospital during the year.”

HANDFORTH URBAN DISTRICT.—“There is no hospital accommodation available for infectious diseases.”

HOLLINGWORTH URBAN DISTRICT.—“The only isolation hospital in Longdendale is situated on Mottram Moor, the ownership being vested in the three Councils of Mottram, Hollingworth and Tintwistle. Only one case has ever been admitted and home isolation has been found to be eminently satisfactory in all cases up-to-date.”

HOOLE URBAN DISTRICT.—“Arrangements exist with the City of Chester by which in addition to the four beds retained

by this Council in the City Isolation Hospital at Sealand we are allowed two additional beds should occasion require, provided that in the opinion of the Medical Officer of Health there shall remain after admission ample provision for all cases received or likely to be received from the City and that in respect of such additional patients we as a Council shall pay the usual maintenance charges as fixed by existing agreement and in lieu of any retaining fee, a sum of ten shillings per patient for each week, or portion of a week, that such patient is in the hospital. These arrangements have been quite satisfactory, no difficulty having been experienced in obtaining hospital accommodation for such of our cases as required removal."

HOYLAKE AND WEST KIRBY URBAN DISTRICT.—"The Wirral Joint Hospital Board supplies the hospitals for the above.

"Forty-three patients were treated in the Clatterbridge Hospital during the year and the accommodation was at all times sufficient for the demands made upon it. The contribution of Hoylake and West Kirby to the funds of the Joint Hospital Board in the financial year 1912-13 was £1,247 14s. 4d., out of a total expenditure of £4,505 16s. 4d. In 1910-11 the contribution was £986, and in 1911-12 £1,394."

KNUTSFORD URBAN DISTRICT.—"The accommodation is ample and is provided by the Joint Hospital Board. We have nothing to do with administration. Three cases of diphtheria, one of enteric fever and one of puerperal fever were removed to Monsall Hospital."

NESTON AND PARKGATE URBAN DISTRICT.—"The Wirral Joint Hospital Board (to the expenses of which you are a contributory body) supply the necessary isolation accommodation for infectious diseases. In conjunction with the Hospital Authority, there has been formulated a scheme so that I receive early notice of the admission of patients and the nature of the diseases from which they may be suffering. This obviates the risk of premises being left without disinfection for more than a few hours. The contributions to the common fund expenses of the Joint Hospital Board and the number of Neston patients treated in the hospital were as follows:—

1911.	1912.	1913.
15 patients, £167 14s. 5d.	9 patients, £255 2s. 10d.	7 patients, £221 0s. 4½d."

SANDBACH URBAN DISTRICT.—"At West Heath, Congleton, we have an isolation hospital with 30 beds—16 for scarlet

ISOLATION HOSPITALS.

fever, eight for diphtheria and six for observation cases. For small-pox we have a hospital at Arclid with ten beds (five for each sex), which can be got ready for use in a very short time, as the caretaker lives on the premises. All infectious cases dangerous to the health of the district or to other members of the household are promptly removed to one of these hospitals, the houses disinfected and bedding stoved. Any doubtful cases are verified at Manchester Laboratory, with whom the Council have an agreement to examine all products. Diphtheria serum is supplied to the residents in the district free of cost."

TARPORLEY URBAN DISTRICT.—"Infectious diseases may be sent to Chester Isolation Hospital, Sealand, near Chester—Tarpорley, Tarvin and Malpas constituting a Joint Hospital Board. Three cases were sent to hospital during 1913."

WILMSLOW URBAN DISTRICT.—"By arrangement with the Manchester Corporation, the Bucklow Joint Hospital Board, on which the Wilmslow Urban District Council is represented, is provided with a sufficient number of beds at Monsall Hospital for cases of infectious disease (excluding tuberculosis). Eight cases of scarlet fever and one of puerperal fever were removed to hospital during the year. The Baguley Sanatorium has been converted into a sanatorium for tuberculosis by the Manchester Corporation. The Bucklow Joint Hospital Board has the use of 15 beds in this institution."

WINSFORD URBAN DISTRICT.—"This is situated at Davenham, has 34 beds and serves an area with some 60,000 inhabitants. From this district we send to it every case that can properly be removed. Other districts do just the opposite; and it is probably to this action on their part that we owe the ability of the hospital to receive all our patients. We have nothing to do with administration."

BUCKLOW RURAL DISTRICT.—"There is ample accommodation in the hospitals of the Manchester Corporation, which is under agreement with the Joint Hospital Board, of which this district is the largest member. We have nothing to do with hospital administration."

CONGLETON RURAL DISTRICT.—"The hospital at West Heath has been of greatest benefit and I have had nothing but praise for the kindness shown to the patients and their relatives. The small-pox hospital at Arclid has been kept in readiness but fortunately it has not been required."

DISLEY RURAL DISTRICT.—“The Hyde Corporation Isolation Hospital is available for cases of infectious disease.”

MALPAS RURAL DISTRICT.—“The Isolation Hospital, Sealand, Chester, is used for ordinary infectious cases. For small-pox arrangements are made with Whitchurch Small-pox Hospital. The Joint Hospital Board for infectious disease consists of Tarporley, Tarvin and Malpas districts.”

MACCLESFIELD RURAL DISTRICT.—“The hospital accommodation available for infectious diseases consists of:—(1) a cottage at Greenway, Sutton, which provides two beds for small-pox, and (2) 14 beds for other infectious diseases at the Macclesfield Corporation Isolation Hospital on the Moss. As no cases of small-pox have occurred in the district the Greenway Hospital has remained unopened. The beds reserved at the Corporation Hospital have proved sufficient for all requirements, eight cases of diphtheria and 31 of scarlet fever having been treated there during the year.”

NANTWICH RURAL DISTRICT.—“The hospital accommodation available for the Rural District consists of the following institutions: The Nantwich Workhouse Infirmary, Worleston; the Nantwich Joint Isolation Hospital; the Nantwich Joint Small-pox Hospital; and the Nantwich and District Cottage Hospital. There is no accommodation for advanced cases of tuberculosis, except the Workhouse Infirmary. As before stated I should much like to see provision made for such cases at the isolation hospital. On account of its distance from Nantwich I cannot recommend the small-pox hospital for that purpose.”

RUNCORN RURAL DISTRICT.—“Last year I congratulated you on the increased accommodation of the isolation hospital from 12 to 24 beds and expressed the hope that it might never have all its beds occupied at one time, but that hope has been destroyed already, for on several occasions it was impossible to receive all the patients who might have been admitted. Still the increased accommodation has proved a great boon and has no doubt been instrumental in keeping down the spread of epidemic disease. It is gratifying to know that the proportion of cases removed to hospital during the year (77) is greater than in any previous year; if the 15 erysipelas cases are excluded, 66 per cent. of the cases were admitted to hospital.

“The small-pox hospital at Moore is, however, kept in order for any possible outbreak and has its own Washington

ISOLATION HOSPITALS—DISINFECTION—BACTERIOLOGICAL EXAMINATION.

Lyon steam disinfecter on the premises, independent of the steam disinfecter at the isolation hospital, Dutton.”

WIRRAL RURAL DISTRICT.—“The Wirral Joint Hospital Board (to the expenses of which you are a contributory body) supply the necessary isolation accommodation for infectious diseases.”

Disinfection.

It is only in very few of the Reports that one finds an account of the methods of disinfection employed. From what I know of these, however, I am satisfied that disinfection in practically all districts is carried out on scientific and rational lines. Of course in a number of districts no steam disinfecter is available and therefore disinfection of bedding, clothing and textile articles generally cannot be at all satisfactorily accomplished. There are plenty of reasonably cheap portable steam disinfectors to be had and there is thus no reason why every district should not possess this very essential means of checking the spread of disease.

Bacteriological Examination.

By the courtesy of Professor Delépine I am able to give a complete and recent statement as to the arrangements made by various sanitary authorities in the Administrative County for the examination of specimens from doubtful cases of diphtheria, typhoid fever, tuberculosis, of samples of water, milk, various food, etc., etc., in connection with the investigation or prevention of outbreaks of disease. Commenting on the list supplied (reproduced below) Professor Delépine writes:—

“With few exceptions the authorities enumerated in the list have made use of the laboratory since 1900 (many had already begun in 1898, Crewe in 1897). Those belonging to the first group are connected with the laboratory by a sort of contract. At first this contract was based upon the payment of an annual minimum fee (M.F.) based on the population—but owing to the complication which this system entailed, I have, in 1908, suggested an annual subscription (S.) of 1s. per 1,000 inhabitants. Nearly all the authorities have accepted the second arrangement. Authorities which do not pay a subscription, are not entitled to the benefit of a reduced scale of fees.

BACTERIOLOGICAL EXAMINATION.

PUBLIC HEALTH LABORATORY, UNIVERSITY OF MANCHESTER.

1. *Places in Cheshire (not including County Boroughs) definitely connected with the Laboratory (paying an Annual Subscription).*

1897. Alderley Edge U.D. ... S.	1898. Knutsford U.D. ... S.
1899. Ashton-upon-Mersey U.D. S.	1902. Lymm U.D. ... S.
1901. Bowdon U.D. ... S.	1898. Middlewich U.D. ... S.
1901. Bredbury and Romiley U.D. S.	1903. Nantwich U.D. ... S.
1898. Bucklow R.D. ... S.	1898. " R.D. ... S.
1913. Buglawton U.D. ... S.	1898. { Northwich U.D. ... S.
1900. Cheadle and Gatley U.D. ... S.	1898. { " R.D. ... S.
1898. Congleton M.B. ... S.	1902. Runcorn R.D. ... S.
1909. " R.D. ... S.	1902. Sale U.D. ... S.
1897. Crewe M.B. ... S.	1912. Sandbach ... S.
1899. Dukinfield M.B. ... S.	1898. Wilmslow U.D. ... S.
1900. Hale U.D. ... S.	1898. Winsford U.D. ... S.
1906. Hoole U.D. ... S.	

2. *Places which are not definitely connected, but which send occasional specimens for examination.*

1913. Alsager U.D.	1899. Hyde M.B.
1898. Altrincham U.D.	1899. Marple U.D.
1897. Bollington U.D.	1908. Mottram U.D.
1913. Chester R.D.C.	1912. Runcorn U.D.
1913. Compstall U.D.	1913. Tarvin U.D.
1899. Hollingworth U.D.	

Macclesfield has an arrangement for a similar purpose with the Lister Institute and Lower Bebington Urban District Council send occasional specimens to the Johnston Laboratories, Liverpool, for examination.

Under the arrangements before referred to with the Public Health Laboratory of the University of Manchester, 915 specimens of various kinds were examined during the year ended June 30th, 1913. The authorities sending specimens, the nature of such specimens and the results of examination are given in the accompanying statement.

The number of specimens yielding positive results is given beneath the figures showing the total number of specimens examined :—

Authority, etc.	Diphtheria	Typhoid.	Sputum.	Milk.	Various.	Total.
<i>County Councils.</i>						
Cheshire, Health Committee	.. 15	—	22	—	25	42
Cheshire, Insurance Committee	... —	—	1	—	1	3
Cheshire Constabulary	... —	—	—	17	—	17

BACTERIOLOGICAL EXAMINATION.

Authority, etc.		Diphtheria	Typhoid.	Sputum.	Milk.	Various.	Total.
<i>Municipal Boroughs.</i>							
Crewe ...	...	$\frac{12}{14}$ 4	$\frac{13}{1}$	$\frac{10}{2}$	—	9	156
Congleton ...	...	$\frac{13}{0}$	—	$\frac{18}{1}$	—	—	31
Hyde ...	...	$\frac{6}{1}$	$\frac{1}{0}$	—	—	—	7
Dukinfield ...	...	$\frac{1}{0}$	$\frac{3}{0}$	$\frac{15}{8}$	—	—	19
<i>Urban Districts.</i>							
Alderley Edge ...	...	$\frac{2}{1}$	—	—	—	—	2
Knutsford ...	...	$\frac{12}{2}$	$\frac{12}{1}$	$\frac{1}{1}$	—	—	5
Winsford ...	...	$\frac{13}{6}$	$\frac{15}{10}$	$\frac{11}{1}$	—	3	42
Northwich ...	...	$\frac{43}{12}$	$\frac{8}{4}$	—	—	10	61
Altrincham ...	...	$\frac{3}{0}$	$\frac{1}{2}$	$\frac{3}{1}$	—	—	10
Ashton-on-Mersey ...	...	$\frac{1}{0}$	$\frac{1}{1}$	$\frac{1}{0}$	—	—	3
Wilmslow ...	...	$\frac{5}{0}$	$\frac{12}{12}$	$\frac{5}{5}$	—	—	15
Marple ...	...	—	$\frac{3}{3}$	$\frac{3}{3}$	—	—	5
Cheadle and Gatley ...	...	$\frac{4}{1}$	$\frac{3}{1}$	—	—	—	7
Hale ...	...	$\frac{13}{3}$	$\frac{23}{2}$	$\frac{9}{5}$	—	—	25
Bredbury and Romiley ...	...	$\frac{5}{1}$	$\frac{12}{3}$	$\frac{4}{3}$	—	—	12
Bowdon ...	...	$\frac{3}{0}$	—	$\frac{1}{0}$	—	—	4
Lymm ...	...	$\frac{1}{0}$	—	—	—	4	5
Sale ...	...	$\frac{6}{2}$	$\frac{3}{1}$	$\frac{7}{2}$	—	—	16
Nantwich ...	...	$\frac{6}{1}$	$\frac{2}{0}$	$\frac{5}{5}$	—	—	13
Hollingworth ...	...	—	$\frac{4}{1}$	$\frac{1}{1}$	—	—	5
Middlewich ...	...	$\frac{2}{0}$	$\frac{1}{0}$	—	—	—	3
Runcorn ...	...	—	—	—	$\frac{6}{4}$	—	6
Sandbach ...	...	$\frac{9}{2}$	—	$\frac{31}{6}$	—	2	42
Hoole ...	...	$\frac{4}{0}$	—	$\frac{5}{5}$	—	—	9
Mottram-in-Longdendale ...	...	—	—	$\frac{0}{0}$	—	—	2
Compstall ...	...	—	—	—	—	2	2
<i>Rural Districts.</i>							
Bucklow ...	...	$\frac{14}{3}$	$\frac{4}{2}$	$\frac{2}{0}$	—	—	20
Nantwich ...	...	$\frac{2}{3}$	$\frac{1}{1}$	$\frac{10}{2}$	—	1	21
Runcorn ...	...	$\frac{3}{0}$	—	—	—	—	3
Northwich ...	...	$\frac{19}{8}$	$\frac{5}{1}$	—	$\frac{5}{1}$	8	37
Congleton ...	...	$\frac{10}{1}$	$\frac{4}{1}$	$\frac{18}{3}$	—	2	34
Tarvin ...	...	—	—	—	—	1	1
<i>Water Companies.</i>							
Ashton-under-Lyne, Stalybridge and Dukinfield Water Co. ...	...	—	—	—	—	95	95
Knutsford Light and Water Co. ...	...	—	—	—	—	17	17
<i>Hospitals and Institutions.</i>							
Northwich, Isolation Hospital ...	...	$\frac{81}{3}$	$\frac{3}{1}$	—	—	1	85
West Heath Sanatorium ...	...	$\frac{49}{3}$	—	$\frac{1}{0}$	—	—	50
Total			...			...	915

Section VII.—Midwives Act, 1902.

At the close of the year 1912 there were 471 midwives on the County Register. During 1913 there were 85 names taken off the Register, the majority of these being Wallasey midwives. Deaths, removals and retirements, accounted for the remainder. Thirty new names were added, this bringing the net total to 416 now on the County Register.

Of those midwives whose names have been removed from the Register, 19 were women who were in *bonâ fide* practice in July, 1901 and 66 were women who had undergone the prescribed training.

Of midwives whose names have been added to the Register, 28 are women who have undergone the prescribed training and two are women who were in *bonâ fide* practice in July, 1901.

The number of properly trained midwives practising in the Administrative County is now 155, as compared with 181 for 1913, 183 for 1912, 180 for 1911, 156 for 1910 and 120 for 1909 (the decline this year is accounted for by the removal of the names of the Wallasey midwives).

The number of midwives who have been trained and certified at a Training School approved by the Central Midwives Board is 37.25 per cent. of the total number on the County Register, as compared with 39.7 per cent. in 1913; 37.57 per cent. in 1912; 35.08 per cent. in 1911; 31 per cent. in 1910; 25.64 per cent. in 1909; 23.67 per cent. in 1908; and 21 per cent. in 1907.

There have been over 150 changes of address, name, &c., notified during the year.

There are a number of registered midwives in the County who only act as monthly nurses and whose names consequently do not appear on the County Register. The names also of a number of nurses in infirmaries who occasionally take maternity cases, or are attached to maternity wards, are not included in this Register.

The number of midwives residing and practising in the several districts in the Administrative County at the close of 1913 is given in the following table :—

MUNICIPAL BOROUGHES.

Congleton	...	...	...	12	Macclesfield	...	...	...	8
Crewe	...	...	...	29	Stalybridge	...	...	...	9
Dukinfield	...	...	...	14					
Hyde	..	...	...	24	Total	..	...	...	96

MIDWIVES.

OTHER URBAN DISTRICTS.

Alderley Edge	...	...	3	Hoyle and West Kirby	...	6
Alsager	...	...	3	Knutsford	...	2
Altrincham	...	...	11	Lymm	...	5
Ashton-upon-Mersey	...	...	4	Marple	...	2
Higher Bebington	...	...	2	Middlewich	...	4
Lower Bebington	...	...	4	Mottram	...	2
Bollington	...	...	4	Nantwich	...	4
Bowdon	...	...	0	Neston and Parkgate	...	4
Bredbury and Romiley	...	...	7	Northwich	...	16
Bromborough	...	...	1	Runcorn	...	13
Buglawton	...	...	5	Sale	...	7
Cheadle and Gatley	...	...	4	Sandbach	...	6
Compstall	...	...	1	Tarporley	...	0
Ellesmere Port and Whitby	...	...	8	Wilmslow	...	5
Hale	...	...	2	Winsford	...	16
Handforth	...	...	0	Yeardsley-cum-Whaley	...	2
Hazel Grove and Bramhall	...	...	2			
Hollingworth	...	...	2			
Hoole	...	...	3	Total	...	160

RURAL DISTRICTS.

Bueklow	...	...	23	Northwich	...	19
Chester	...	...	11	Runcorn	...	19
Congleton	...	...	16	Tarvin	...	11
Disley	...	...	2	Tintwistle	...	1
Macclesfield	...	...	11	Wirral	...	15
Malpas	...	...	9			
Nantwich	...	...	23	Total	...	160

The total number of midwives residing in the County and whose names appear on the County Register at the close of 1913 is therefore 416.

In the following districts there are no midwives practising—Bowdon Urban, Handforth Urban and Tarporley Urban.

The following particulars are summarised from the special Reports of the Medical Officers of Health.

(a) Cases attended by Midwives.

The total number of cases attended by midwives in the Administrative County during 1913 was 9,224, a slight decrease on the figure for 1912. The total number of births registered in the Administrative County was 13,206. It thus appears that midwives attended approximately 69 per cent. of the total births in the County. In 1912, 1911 and 1910 it was 66.6 per cent. and in 1909, 59 per cent.

The total number of still-births notified by midwives in the County was 253.

(b) Keeping of Case Books, &c.

In all districts practically the whole of the midwives keep case books or registers, but a very few illiterate women who cannot either read or write naturally do not concern themselves

with such records. In some cases of illiteracy the midwives keep case books and registers, but rely upon the assistance of relatives and friends to keep them entered up. In one or two instances it is stated that case books are not kept or are not entered up to date.

(c) Records of sending for Medical Help.

It appears that in 891 cases medical help was summoned by the midwife. Taking the total number of cases attended by midwives as 9,224, this gives the percentage of cases in which they deemed it advisable to summon medical help as 9.6, a somewhat low figure.

As instancing the variations in this matter in the different districts, two extreme cases may be cited.

In Hyde there were 667 cases attended by midwives and 127 records of sending for medical help; whereas in Stalybridge out of 585 cases there were only 20 such records.

(d) Taking of Pulse and Temperature.

The remarks under this heading are of various characters and probably afford the best index obtainable to the capability of the midwives practising in the County.

In Congleton Borough it is reported that this is done "by those who can read and write."

In Crewe Borough it is stated "No, only in about three cases."

In Dukinfield Borough the Medical Officer of Health says "ten have taken it for years, the other four have been instructed in this work by me frequently during the past year."

At Hyde the rule is "not observed by all."

From Maeclesfield the reply is "not so well as I could wish, but I have this matter under observation and they are gradually improving."

In Stalybridge "the majority are now carrying out this direction and the others are learning to do so."

In Lynn Urban District it is stated that hitherto the rule has not been observed by all, but this year it will be done systematically by every one.

MIDWIVES.

One of the four Middlewich midwives does not observe the rule.

From Mottram the answer is in the negative.

From Sandbach the reply is "doubtful."

In Wilmslow "one midwife is incapable of learning."

In Winsford they do not observe the rule, "they are incapable of learning it."

The Bucklow Rural District Medical Officer of Health says "the illiterate women cannot learn to observe the rule."

In the Chester Rural District "instructions are given at every visit."

In the Macclesfield Rural District "the older women are unable to carry this work out efficiently."

Instruction is still being given in the Malpas Rural District.

In Northwich Rural District it is reported that "there are exceptions."

From Runcorn Rural District it is reported "that there has been great improvement."

About half the districts reply in the affirmative, but it is the general answer that the untrained women do not comply with this rule and where attempts are made to do so, too much reliance cannot be placed on the results recorded.

(e) Appliances.

It may be stated generally that most of the illiterate midwives either do not possess or cannot reliably use catheters or vaginal douches and the Medical Officers generally hold that this type of woman is better without such appliances.

The large majority of the replies to the enquiry as to whether the appliances required by the rules to be kept by each midwife are actually provided and kept clean and in good order, are in the affirmative.

(f) Means of Disinfection.

The facilities afforded in the various districts for the disinfection of midwives who have been attending cases of puerperal fever or other infectious disease, or cases in which there are foul smelling discharges, vary very considerably. For these, therefore, as well as for other purposes, it is very desirable that districts at

present unprovided with means of disinfecting the clothing of the midwives practising in their areas should make arrangements to this end as early as possible. The following districts have no such provision, viz., Alsager, Ashton-upon-Mersey, Bollington, Compstall, Hale, Knutsford, Lymm, Middlewich, Mottram, Nantwich, Sale, Winsford, Yeardsley, Bucklow Rural, Congleton Rural, Disley Rural, Macclesfield Rural and Tintwistle Rural.

(g) Puerperal Fever.

In 16 cases throughout the whole of the Administrative County cases of puerperal fever are known to have arisen in cases attended by registered midwives. The Medical Officers of Health have uniformly carried out the most rigorous measures on the occurrence of such disease in the practice of a midwife.

(h) Penal Procedure.

Three cases of breach of the rules of the Central Midwives Board were reported to that Board by your Committee and in consequence thereof two women were struck off the Roll and one cautioned as to her future conduct. Two cases of practice by unqualified women were reported, but it was thought that severe cautions would meet the circumstances of the cases. In one case where it was decided to take proceedings, this was found impossible for the reason referred to later in this report.

(i) Shortage of Supply.

This is said to be the case in the following districts:—

Crewe Borough. The Medical Officer of Health remarks
“at the end of 1913 there were only 20 midwives on the roll able for work. The shortage is a very serious one and I think the County Nursing Association should be approached so that further provision may be made for the future.”

Macclesfield Borough. “There is now beginning to be a shortage in this town.”

Nantwich Urban District. “There is a distinct shortage of midwives in this district for some time.”

Tarporley Urban District. “There is no midwife here and one is badly needed.”

Macclesfield Rural District. “There is still a shortage in the hilly parts of the district.”

Wirral Rural District. “A midwife is needed in the village of Thornton Hough.”

MIDWIVES.

The Midwives Act Committee have dealt with a number of cases of malpractice, negligence and breach of the rules of the Central Midwives Board during the year and in consequence of that action the names of several midwives have been struck off the register by the Penal Cases Committee of the Central Board.

I think there is some improvement in the general proficiency of the midwives in this county. Many of the District Medical Officers of Health have gone to considerable trouble to instruct the old "bonâ-fide" women in the taking of the pulse and the reading of the thermometer. In order to assist in this instruction a copy of the leaflet, which appears opposite this page, has been sent to every midwife, certified or not, practising in the County. The illiterate woman with no knowledge of the real meaning of the word asepsis is fast disappearing and the trained midwife is taking her place. A few, but only a few, of the trained women are apt to think that they are qualified to deal with any emergency or complication and do not scruple to offer advice on medical matters quite outside their province. However, this comes to light sooner or later and is easily corrected.

The shortage of midwives in a few areas is rather a serious matter. The County Council have for some years generously made a grant of £250 per annum to enable women to be trained through the County Nursing Association—the women when trained taking up work as district nurses and acting in addition as midwives. There are a few matters of importance in the last Report of the Central Midwives Board which I feel sure will interest your Committee, dealing as they do with difficulties which have often arisen in this County.

"*Rule E. 13.*—Of the more important alterations the new Rule E. 13 requires a midwife to "take and record the pulse and temperature of the patient at each visit." Hitherto the rules though inferentially requiring the patient's temperature to be taken in order that the midwife might be in a position to comply with the obligation to advise medical aid in certain cases had not specifically compelled her to take the patient's temperature at each visit. It was felt by the Board that in the case of the majority of the untrained women who had been certified under Section 2 of the Act such a rule would involve the compulsory removal of a considerable number of names from the Roll, a result which could hardly have been anticipated by Parliament when entitling such women to be certified without evidence of capacity. In view, however, of the fact that eight years had now elapsed since the Act had come into operation, during which time many of the untrained women had disappeared from

HOW TO TAKE AND RECORD PULSE AND TEMPERATURE.

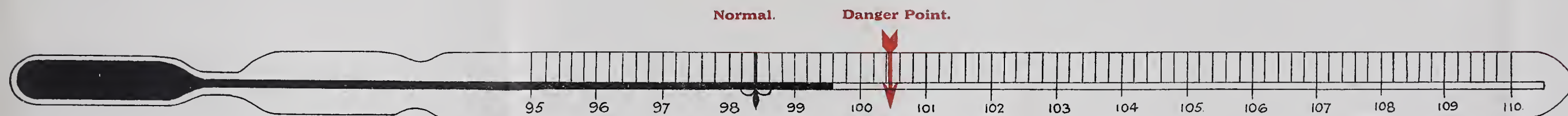
SPECIAL NOTE.—The Rules of the Central Midwives Board make it compulsory on all Midwives to take and record the pulse and temperature of the Patient at each visit.

How to take the pulse.—Make the patient hold her arm straight out (not bent at the elbow) and turn the palm of her hand upwards. Lay 2 or 3 of your fingers with the 'pads' of the fingers on the thumb side of the patient's wrist, and about half-an-inch from the edge of her wrist. You will here find the pulse beating. Count it carefully for 1 minute, using a watch with a seconds hand or a sand-glass. Don't take the pulse directly after you have come into the room to see the patient, nor directly after the patient has been washed or changed, because anything of this kind and any excitement makes the pulse beat more quickly for a time. When you have counted it make a note of it at once, as the Rules require. The normal pulse in an adult is about 70 per minute.

The Clinical Thermometer.—This delicate instrument is made of glass, and consequently needs to be very carefully handled. It should always be kept in its metal container, **with the bulb or mercury end innermost.** If placed upon a table, or flat surface, care must be taken to prevent it rolling off; a fall even if the Thermometer is in its case, will almost invariably cause it to be broken.

After use it should be gently rinsed in cold water, and lightly dried. **Hot water must never be used.**

How to take the Temperature.—The temperature of the body may be taken in the mouth or arm-pit.



First shake the mercury down to about the mark 96°, by holding the instrument, with bulb end downwards, firmly between the thumb and first two fingers of the right hand and giving a sharp jerk in a downward direction. Then carefully place the bulb or mercury end in the place selected. If in the mouth, the bulb should rest under, and to either side of the tongue with the lips kept firmly closed. Under the arm, care must be taken that it lies deep in the arm-pit, and not separated from the skin on either side; the arm is then pressed close to the body, and the forearm brought across the chest to the opposite shoulder. If the patient is perspiring dry the arm-pit with a warm towel before putting the thermometer in. It must be kept in position for 5 minutes, and then carefully read off without shaking. If the thermometer still remains at 95 or 96 at the end of this time, it has probably not been in a proper position and must be carefully put in again for another 5 minutes.

To read.—Hold the thermometer between the thumb and forefinger of both hands, with the mercury bulb to the left, turn gently until the position of the top of the column of mercury in the stem can be clearly seen, and note the division on the scale to which it is opposite.

Each of the large divisions is numbered thus: 96, 97, 98, &c.

Each of the smaller divisions in between the specially marked or numbered lines counts '2 thus: '2, '4, '6, &c. The number of these smaller divisions to which the mercury rises above a large division are added together.

To record the temperature on paper.—If the column of mercury stops *exactly* at a large or marked division, the figure opposite that line shews the temperature. But it will usually stop some way between two large divisions or lines. In such case first note and write down the number of the large division, just below or to the left of the top of the column of mercury. Then place a "dot," and write down after it the total of the smaller divisions between the large division noted and the position of the mercury counting each small division as 2. For example—the reading of the thermometer in the diagram above shown is, 99.6.

NOTE.—If the temperature is higher than 100.4° and the pulse is quickened, you are to advise those responsible to call in medical assistance, fill up the proper printed form and report the fact to the Medical Officer of Health.

the Roll, while others had been taught by the Local Supervising Authorities to take temperatures correctly, it was thought that the time had arrived when it should be made obligatory, in the interest of the patient, that a midwife should record pulse and temperature at each visit. The result has been the removal from the Roll of a certain number of untrained midwives who, after repeated instruction by the Local Supervising Authority, have been found incapable of learning how to take a temperature with safety, while others who had hitherto neglected to avail themselves of their opportunities have now put themselves in a position to comply with the rule.

*“Rule E. 5.—*The Rule (E. 5) requiring a midwife who had “been in attendance upon a patient suffering from puerperal fever, or from any other illness supposed to be infectious” to disinfect herself, her clothing and appliances to the satisfaction of the Local Supervising Authority, had been found to be defective in omitting to require the disinfection of the midwife in certain other cases where she had rendered herself liable to convey infection. The rule was accordingly re-drafted and now provides for the disinfection of the midwife when she has been in contact with a person who is suffering from any “condition supposed to be infectious, or is herself liable to be a source of infection.” This amendment has considerably strengthened the hands of the Local Supervising Authorities in dealing with such cases.

*“Rule F.—*Experience has shown the Board that midwives were occasionally suspended by Local Supervising Authorities without due regard to the fact that the only power of suspension given by the Act (Section 8 (3)) is “in accordance with the Rules under this Act, if such suspension appears necessary in order to prevent the spread of infection.” In the opinion of the Board a period of 24 hours should in ordinary cases be sufficient for the purposes of disinfection and while suspension without disinfection is useless, suspension for longer than 24 hours is unnecessary unless in an exceptional case, such as that of defective arrangements for disinfection. Rule F. was accordingly amended by the addition of a new Rule providing that the period of suspension “shall not be longer than is required by the midwife for the purpose of disinfecting herself, her clothing and her appliances to the satisfaction of the Local Supervising Authority.” It was further provided that if the period was expected to, or did, in fact, last for more than 24 hours, the Authority should forthwith communicate to the Board the special circumstances in which the prolonged suspension arose and the matter should be subject

to revision by the Board. It is believed that this Rule has met the case with which it was designed to deal and no occasion has yet arisen for the Board to act on its power of revision.

“Practice by Uncertified Women.”—Complaints continue to reach the Board as to the prevalence of midwifery practice by uncertified women. Difficulties in the way of a successful prosecution are found to arise from the necessity of satisfying the words, “habitually and for gain” occurring in Section 1 (2) of the Midwives Act, which, however desirable they may have been thought when the Act was passed in 1902, appear now to be unnecessary and hampering to the administration of the Act. It is complained that many magisterial benches, while requiring strict proof of the practice being habitual and for gain, take a somewhat lax view of the meaning of “emergency” protected by the Act.”

I have had several cases illustrative of the difficulty mentioned in the last paragraph of this extract. It is an easy matter for a woman practising as a midwife to tell the patient to engage the services of a doctor, but with no intention whatever of calling him in unless something goes wrong and this is very frequently done. It is sometimes arranged also for payment for services rendered to be postponed for a month or two, so that should inquiries be made shortly after the birth has taken place (when such inquiries usually are made) the uncertified woman can, with a certain amount of truth, say that she has not received any payment. I had two cases of this kind in the practice of the same uncertified woman at the time of writing this Report.

The fact of the information having to be laid for prosecution in cases of practice by uncertified women within six months of the commission of the offence to some extent destroys the usefulness of the Act. In one or two cases I have investigated it has not been possible to prosecute because the proof of “habitual” practice necessitated the bringing in of cases outside this six months’ limit. One would have thought the fact that the limitation imposed by the Summary Jurisdiction Act, 1884, does not apply to continuing offences would have been sufficient to dispose of this difficulty, but the fact remains that the Clerk to one of the Benches of Magistrates in Cheshire informed me when I wanted to take out a summons that he should be compelled to advise his Bench that the action must fail for the reason given above.

Section VIII.—Water Supply.

The extracts from the Medical Officers' and Surveyors' Reports which I submit herewith give a fairly complete statement of the existing water supplies in the Administrative County. It will be seen from these that Cheshire is in a fairly fortunate position in this respect. This is due to the fact that, geologically and physically speaking, Cheshire is well situated. The triassic rocks (new red sandstone) are excellent water-yielding strata and they virtually extend over the whole of the Cheshire plains. The water from this formation is usually bright, colourless, wholesome and palatable, though apt to be hard owing to the presence of the sulphate and carbonate of calcium. In the east of the County running up from Congleton to Stockport and Hyde the geological formation is millstone grit, coal measures and a little mountain limestone: from millstone grit and mountain limestone only little water is available by reason of the impermeability of the strata and what little is obtainable is got from springs and varies a good deal in character. Surface supplies are available however and if the dangers of lead-poisoning and discolouration due to peat are sufficiently guarded against, these are usually excellent for domestic and manufacturing purposes.

In certain districts, or portions of districts, there is an inadequate supply.

In the Chester Rural District Mickle Trafford and Ince are inadequately supplied.

A scheme has been prepared and is before the Local Government Board for the Nantwich Rural District, dealing with the townships of Wrenbury, Newhall, Dodcott-cum-Wilkesley, Audlem, Hankelow, Buerton, Baddington, Coole Pilate, Austerson, Hatherton, Sound and Broomhall, which are without a proper supply. This still leaves Hunsterson and Checkley-cum-Wrinehill inadequately served it is believed.

Runcorn Rural District. It is stated that 26 out of the 40 townships in this district have excellent public supplies, the remaining townships being mainly supplied by pumps and wells which are, generally speaking, of fair quality and quantity: some of these supplies are under the consideration of the Council with a view to their improvement.

Northwich Rural District. Here the parishes of Byley, Whateroft and Rudheath are inadequately supplied and a

WATER SUPPLY.

scheme is in hand to remedy this state of affairs. The districts of Allostock, Lach Dennis and Nether Peover are also engaging the attention of the Council.

Tarvin Rural District. The supply is still inadequate in Farndon, Burwardsley, Broxton, Tilston and Harthill and the District Council ought to lose no further time in dealing with them. Kelsall is, in my opinion, only indifferently served with water.

Nantwich Urban District. Here there is a very indifferent supply both as to quality and quantity, but trial borings are being made at Madeley for a new supply: it is believed that the scheme is likely to prove quite satisfactory.

Tarporley Urban District. Rushton village and some cottages in Utkinton are still somewhat inadequately supplied.

Wirral Rural District. Irby Mill Hill and Pensby are by no means well off for water. At Barnston, Puddington and Ness some of the well supplies are unsatisfactory.

The new reservoir in the Chew Valley for the Dukinfield supply is now completed. The new supply for Alsager Urban District is well in hand.

In Bollington Urban District there is only a limited supply to some houses and a new pump is to be installed to overcome this.

A new settling tank is to be laid down at Sandbach to permit of the softening operations being more effectively carried out.

Winsford Urban District are seeking to obtain a new supply from Oakmere, their present supply being, it is understood, liable to certain contamination on occasions.

In Taxal and Rainow the Macclesfield Rural District Council have carried out extensions of the public supply and are considering the improvement of the supply to Higher Disley.

The supply to Matley in the Tintwistle Rural District is said to be inadequate during the summer months.

In a number of other districts reference is made to the inadequate supply of houses lying at a distance from the water-mains where the connection of the main to the houses is not practicable owing to the cost.

	Source or Sources of Water Supply.				Parts of District without a proper supply.				Remarks.
MUNICIPAL BOROUGHS—									
Congleton	Council Supply	...	...	A few thinly populated outlying and inaccessible places			...
Crewe	Whitmore, Staffs. (L. & N. W. Ry. Co.)	...	...	None			...
Dukinfield	Swineshaw Valley	...	...	None			...
Hyde	Manchester (Woodhead)	...	...	None			New reservoir at Chew Valley completed.
Macclesfield	Macclesfield	...	...	None			...
Stalybridge	Swineshaw Valley	...	...	A few outlying cottages supplied from springs			...
OTHER URBAN DISTRICTS—									
Alderley Edge	Stockport	...	...	Few isolated cottages supplied by wells			...
Alsager	Bore-hole, Nr. Oak Farm, Alsager	...	...	Isolated houses and farms			The scheme is not yet complete, but sanctioned.
Altrincham	North Cheshire Water Co. (Woodhead)	...	...	None			...
Ashton-upon-Mersey	North Cheshire Water Co. (Woodhead)	...	...	Outlying farms			...
Higher Bebington	West Cheshire Water Co.	...	...	None			Complaints of hardness.
Lower Bebington	West Cheshire Water Co.	...	...	None			Ditto.
Bollington	Bore-holes, Lowerhouse and Dane Bent	...	...	Few houses very high impossible to supply			Limited supply to some houses. New pump to be installed.
Bowdon	North Cheshire Water Co.	...	...	Few houses and farms in Bowgreen area			...
Bredbury and Romiley	Manchester and Stockport supplies	...	...	Few houses and farms			...
Bromborough	West Cheshire and Price's deep well	...	...	None			Both supplies are rather hard.
Buglawton	Buglawton	...	...	None			...
Cheadle and Gatley	Stockport	...	...	None			...
Compstall	Compstall	...	...	Rural part supplied by wells			...
Ellesmere Port and Whitby	West Cheshire Water Co.	...	...	Nine houses from condemned wells			The wells are being dealt with by Council.
Hale	North Cheshire Water Co.	...	...	Four springs used for drinking water			...
Handforth	Stockport Corporation	...	...	A few isolated houses			...
Hazel Grove and Bramhall	Lyme Reservoir (Stockport)	...	...	None			...
Hollingworth	Arnfield Clough (Manchester)	...	...	Number of houses are supplied from wells			...
Hoole	Chester (River Dee)	...	...	None			...
Hoylake and West Kirby	Hoylake and West Kirby Co. (Grange Hill & Newton)	...	...	None			...
Knutsford	Knutsford Water Co.	...	...	None			...
Lymm	Lymm Council	...	...	Few outlying farms and cottages			...
Marple	Stockport Corporation	...	...	Dooley Lane portion...			...
Middlewich	Middlewich Council	...	...	About six houses			...
Mottram	Arnfield Clough (Manchester)	...	...	None			Peat came down pipes.
Nantwich	Baddiley Waterworks	...	...	Eight houses from a well			Pressure bad and new supply from Madeley under construction.
Neston and Parkgate	Neston Council (also Liverpool)	..	...	Three cottages carry half-mile, four cottages unsatisfactory wells			...
Northwich	Cotebrook	...	...	Great shortage at times			Application to Parliament for additional supply.
Runcorn	Runcorn and Liverpool	...	...	None			...
Sale	North Cheshire Water Co.	...	...	None			...
Sandbach	Sandbach Council	...	...	None			New settling tank to be erected.
Tarporley	Liverpool (Vyrnwy) and Council supply	...	...	Outlying parts from wells, Rushton Village 300 yards from supply			...
Wilmslow	Stockport	...	...	Rural parts from wells			...
Winsford	Little Budworth	...	...	Few houses from wells...			Manurial contamination receiving serious consideration.
Yardsley-cum-Whaley	Council	...	...	None			Not adequate and Council in negotiation with Stockport.
RURAL DISTRICTS—									
Bucklow	North Cheshire Water Co.	...	...	Outlying areas from wells			...
Chester	Chester, Wrexham and West Cheshire Co.'s.	...	...	Outlying areas from wells			Mickle Trafford and Ince badly supplied.
Congleton	Crewe, Sandbach, Middlewich & several Council supplies	...	...	Mow Cop, Mount Pleasant, Mow Bank, Cranage and Hassall Green and Betchton			...
Disley	Stockport	...	...	Higher Disley			Council considering supply to Higher Disley.
Macclesfield	Stockport, Buglawton and several private sources	...	...	Parts of area from wells			In Taxal and Rainow extensions have been carried out.
Malpas	Liverpool	...	...	Large portion of area supplied by wells			...
Nantwich	Liverpool and Crewe	...	...	Many wells and Audlem area badly supplied			Large scheme for Audlem district before the L.G.B.
Northwich	Various Council works and Winsford, Middlewich and Liverpool	...	...	Byley, Whatcroft & Rudheath, Allstock & Lostock, parts of Delamere & Oakmere			Certain parts of the district poorly supplied are being considered by the Council & progress is being made.
Runcorn	Liverpool, Warrington and Council's works	...	...	Fourteen townships are supplied from pump wells which are reported to be fairly good			...
Tarvin	Liverpool and Wrexham	...	...	Large portion of area from wells (many polluted)			...
Tintwistle	Tintwistle and Gallows Clough	...	...	Hattersley and other parts supplied by wells			Matley supply insufficient in summer.
Wirral	Wirral, West Cheshire, Birkenhead and West Kirby Water Co.'s	...	...	Barnston Wells, Puddington Cottages, Ness and several other well supplies unsatisfactory			Council is giving attention to bad wells.

The West Cheshire Water Co. now have their Permutit Water-softening plant at work at Hooton. The water, as may be recollected, comes from boreholes in the red sandstone with an average depth of about 800 feet. The plant comprises two iron-removing units and 14 softening units (two batteries of seven units). The water, at the rate of about 2,000,000 gallons per day is first sent through the iron-removing plant (containing manganese permutit) and then half of the water is sent through the softening or sodium permutit plant where the hardness is reduced to zero. After this the softened water is allowed to mix with the iron-free hard water and by means of the mixture a water of approximately 9 degrees of hardness is obtained.

Each of the iron-removing units is said to be capable of treating 2,000,000 gallons of water before it requires regenerating. The regeneration is effected by passing through the permutit potassium permanganate—a process occupying about twelve hours. The softening plant is believed to be so arranged that each battery of seven units is capable of dealing with the whole supply for twelve hours after which the permutit is regenerated by passing a 10 per cent. solution of sodium chloride (common salt) through—the process occupying about ten hours.

The waste necessitated by the regenerative processes is said to be about 10,000 gallons at each regeneration or about 58,000 gallons per 24 hours. A certain amount of carbonate of soda is added to the water during the softening process: whilst this has probably no effect on the health of the consumers it will undoubtedly have some effect on boilers and hot water systems. The question of the waste water entering the sewers of the District Council is, I believe, having their close attention.

Numerous analyses have been made of this particular water during the year in order to ascertain whether or not the Company were fulfilling their statutory obligation to soften the water down to 10 degrees.

I append certain statements of District Medical Officers of Health, Surveyors and others on this important question of water supply.

CREWE MUNICIPAL BOROUGH.—“The water supply is owned by the London and North Western Railway Company and is obtained from artesian wells at Whitmore, Staffordshire. The quality of

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the water for drinking purposes is excellent, although somewhat hard for domestic and laundry use. The supply has never failed even after the most prolonged drought.

“The total quantity of water given below is the amount actually paid for to the Railway Company, plus 20½ million gallons, the estimated amount supplied directly by the Company to their own property.

Year	Quantity consumed during the year in gallons	No. of Inhabited Houses.	Population estimated to middle of year.	Consumption per house per annum in gallons	Consumption per head of Population per day in gallons
1911	234,634,190	9,916	45,042	23,662	14.2
1912	210,224,708	9,922	45,342	21,187	12.7
1913	*195,761,317	10,107	45,652	19,269	11.8

* Figures for South Ward in December not recorded.

DUKINFIELD MUNICIPAL BOROUGH.—“The domestic water in Dukinfield is excellent in quality and abundant in quantity. During the dry summer of 1911 there was no shortage. Dukinfield is joint owner of the Waterworks in the Swineshaw and Chew Valleys, together with the Boroughs of Ashton-under-Lyne, Stalybridge and Mossley. The present capacity of the reservoirs owned by the Joint Waterworks Committee is about 900 million gallons and when the new reservoir in the Chew Valley is completed it is estimated that the capacity will be increased by 200 million gallons. The water, at present, comes from the wells, springs and streams in the Swineshaw Valley and is free from any risk of pollution. The water is soft, but during the year 1912 the whole of the domestic supply of water for this district has been filtered and treated. The method of treatment was carried out on most modern scientific principles. Two filter houses have been opened at Swineshaw and Chew Valley respectively.”

HYDE MUNICIPAL BOROUGH.—“The water supply is obtained from the reservoirs of the Manchester Corporation, situated at Woodhead. The supply for trade purposes is obtained from the reservoirs belonging to the Corporation situated at Gee Cross.”

STALYBRIDGE MUNICIPAL BOROUGH.—“Along with the neighbouring Boroughs of Ashton-under-Lyne, Dukinfield and

Mossley, Stalybridge is supplied with an abundance of pure water from extensive reservoirs which have a holding capacity of close upon 900,000,000 gallons and a large reservoir in the Chew Valley, for water for compensation purposes, has recently been constructed. This new reservoir has a capacity of about 200,000,000 gallons. Its gathering ground is 1,730 acres in extent and has an elevation of 1,750 feet. The supply to Stalybridge is almost wholly derived from the Brushes reservoir, but portions of the borough, namely, Heyrod, Hough Hill and the district of Mottram Road above Bower Fold, are supplied from the Lower Swineshaw reservoir, which also supplies the adjacent Borough of Mossley. The gathering ground at Swineshaw is 1,300 acres in extent and has an elevation of 884 feet. The Higher Swineshaw Reservoir has a depth of 53 feet and a capacity of 168,908,000 gallons and it supplies both the Lower Swineshaw Reservoir and the Brushes Reservoir. On September 19th, 1912, the filter installations at the Brushes Reservoir and at Ashway Gap were opened so that the whole of the water distributed from the Swineshaw and Greenfield Valleys is now freed from suspended matter and also has its acidity neutralised so as to render it incapable of absorbing lead and insidiously causing lead poisoning. During the past year no case of lead poisoning, attributable to the town's water supply, has been brought to my notice."

ALDERLEY EDGE URBAN DISTRICT.—"The water is supplied by the Stockport Corporation and comes from their reservoir at Kinder to a reservoir at Alderley Edge. A larger reservoir than this one is now in course of construction and will shortly be completed. There will then be a better pressure of water to those houses situated at the top of the Edge. The supply has been adequate. On analysis it proves to be a first-class water, of great purity, fit for domestic use and free from suspended matter. Special analysis was made for effect on lead and no trace of any such action could be found."

ALSAGER URBAN DISTRICT.—"The Alsager and Linley water supply is from the same source as last year. On April 2nd samples of water were taken from Well No. 2 and tube and sent to the County Analyst. Report received was similar to others, *i.e.*, 'an exceedingly pure, although very hard sample of water.'

"Since my last report the Engineer engaged by the Alsager Urban District Council has prepared the necessary plans and estimates, &c., for the new scheme.

"On June 19th a Local Government Board enquiry was held in the Council Room, the object being the negotiation by the Council for the loan of money for works of water supply, including construction of a reservoir capable of holding over 100,000 gallons, on the land adjoining the road between the Oak Farm, Alsager, and Mere Lake, Talk. The granting of this loan, amounting to £7,566, has been sanctioned. Boring in No. 2 Borehole has reached the depth of about 150 feet. The contracts for supplying and laying of mains and the necessary machinery have been given out. Another sample of water from No. 1 boring in the new Well was taken and sent for analysis in July. The report was similar to the first, *i.e.*, 'this is a first-class water of a high degree of purity and fit for domestic use.' This water is also softer than the present local supply."

ALTRINCHAM URBAN DISTRICT.—"The water supply is derived from Manchester, through the agency of the North Cheshire Water Company and is continuous, abundant and good."

ASHTON-UPON-MERSEY URBAN DISTRICT.—"The water is supplied by the North Cheshire Water Company, which gets its water from the Corporation of Manchester, chiefly from Woodhead; but in case of emergency the supply comes from Thirlmere. It is sufficient in quantity and good in quality."

HIGHER BEBINGTON URBAN DISTRICT.—"The district has a constant supply of water provided by the West Cheshire Water Company. The hardness of this water, which is derived from wells in the new red sandstone, has been a cause of complaint amongst the consumers for many years. As the result of the West Cheshire Water Company being compelled to soften the water from the Hooton well before distribution, it was anticipated that a softer supply would be provided, but the state of the water is the cause of much dissatisfaction. The water supplied is not the softened water from Hooton and is probably a mixture of Hooton and Prenton Well waters. It seems that it is within the legal right of the Company to supply whichever water they please and the Act only compels them to soften the Hooton product."

LOWER BEBINGTON URBAN DISTRICT.—"A private Company—The West Cheshire Water Company—supplies the district. The supply is a constant one derived from wells in the new red sandstone. Samples of the water distributed have been submitted for analysis more especially with regard to the question of hardness about which there have been complaints."

It will be within the recollection of everyone that the West Cheshire Water Company is under an obligation to soften the water from the Hooton well and an explanation of the persistent statements that the water has not been softened may be found in the circumstance that the water delivered is from the Prenton and not from the Hooton well."

BOLLINGTON URBAN DISTRICT.—"The district obtains its water from the two boreholes situated at Lowerhouse and Dane Bent in the neighbouring parish of Rainow. At Lowerhouse the altitude is 794 feet and the depth of the borehole is 210 feet, whilst at Dane Bent the altitude is 750.75 feet and the depth of the borehole 426 feet. A pump was installed at Dane Bent during the previous year which increased the supply from this borehole from 30,000 gallons to 90,000 gallons a day. This pump was in constant use from July to November of the past year. After this extended period of pumping it was found that the water overflowed at the borehole in 55 minutes on ceasing to pump. This shews that the supply is sufficient for the district from this one source alone. It was found, however, that when the reservoir at Lowerhouse is low, that there is only a limited supply of water to the houses of the district situated high up. In order to give a more regular supply to these a new powerful pump is to be installed which will force the water into the main and overcome the head between the two supplies. With the exception just mentioned the supply has been sufficient for the year's needs. There are a few houses situated too high up on the hill side or at too isolated spots which it has been found hitherto impossible to supply from the mains and which are still dependent on springs. The last bacteriological analysis of the water was made by Messrs. Crace, Calvert & Thompson in 1911, when their report was most satisfactory. It is time, in the opinion of your Medical Officer, that a further analysis be made."

BOWDON URBAN DISTRICT.—"The water is supplied to Bowdon from the North Cheshire Water Co. and I have had some complaints of there being at times a reddish deposit in it. The Manager of the Company says this is of a peaty and innocuous nature, but it has not been analysed. I have had no complaints of the water causing disease. A few farms and cottages in the Bowgreen area use well water but these are now well protected from pollution and the quantity and quality of the water is good."

BREDBURY AND ROMILEY URBAN DISTRICT.—"Our chief supply is from the Manchester Corporation reservoirs at Woodhead. This is very good drinking water, but complaints are

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still made of a yellowish-red sediment being found in it at times. This is a fine peat-fibre and is not injurious to health; it is unsightly when in excess, but is readily removed by simple filtration, or by standing. We have also an abundant supply from the New Kinder Waterworks of the Stockport Corporation. It is a clear, wholesome drinking water, with a force sufficient to supply the higher parts of the district."

BROMBOROUGH URBAN DISTRICT.—"There is a constant supply of water from wells at Hooton, in the new red sandstone owned by the West Cheshire Water Company. This Company entered into a compact with the consumers to lessen the hardness of the water provided. By the agreement the water supplied after 1st November, 1912, was not to exceed 10 degrees of hardness, but the Company later received permission to delay the use of the softening process until the beginning of 1913. Samples of the water taken from various parts of the district in May, 1913, showed that the Company had softened the water to the required degree, but in December, a sample taken at the Council Offices, gave on analysis by the County Analyst, a total hardness of 13 degrees on Clarke's scale, so it must be concluded that either the Company had not softened the water in accordance with the terms of their Act, or that Bromborough is supplied at times from the Prenton Wells, which are the property of the same or an allied Company. It may be within the legal right of the West Cheshire Water Company to supply Prenton Well water to Bromborough and it must be noted that they are only compelled to soften the water from the Hooton source. The water supplied was of 'a very high degree of organic purity.'

"Bromborough Pool Village is supplied from a deep well in the new red sandstone at Price's Patent Candle Works. A sample of this water was analysed and was of 'a very high degree of organic purity,' but was very hard, as the total hardness was 19.5 degrees, of which 15 degrees were due to substances which were deposited on boiling."

CHEADLE AND GATLEY URBAN DISTRICT.—"The water for the district is supplied by the Stockport Corporation and is sufficient for the needs of the district. There was no curtailment of the supply, nor were there any complaints as to the purity of the water. Four houses have been provided with town's water and one well has been closed. Samples of water have been taken for the purpose of analysis and the report condemned the water in one case. In this case town's water has been supplied."

COMPSTALL URBAN DISTRICT.—“The water supply for the urban portion of the district is constant, abundant and of good quality. It has been occasionally chemically examined and found to be free from lead and to be pure and palatable. It is obtained from springs on the upland and conveyed to two reservoirs, from whence it is conveyed by mains to the houses. The mains are periodically flushed and provision has been made for turning the water before it reaches the reservoirs, in times of flood.

“The rural portion of the district is supplied by springs and wells. These have been inspected and found to be free from contamination, except in one case. This spring supplied Rose Cottage, where diphtheria occurred in September and, on inspection, was found to be unprotected. The defect was remedied immediately.”

ELLESMERE PORT AND WHITBY URBAN DISTRICT.-- “The West Cheshire Water Company provides a constant supply of water which is derived from deep wells in the new red sandstone. The hardness of this water was a frequent cause of complaint among the ratepayers and the West Cheshire Water Bill was opposed in consequence. As a result the company were compelled to undertake works for the softening of the water before its delivery to the consumers. A large water tower has been constructed in Whitby and it was anticipated that a much more generous supply would be obtained on its completion, but, so far as I can judge from housing inspections, this anticipation has not been realised, for the flush cisterns to the w.c.'s remain empty all day through. The water mains are probably inadequate for the number of houses which draw their supplies from them and one cannot regard the continued existence of this state of affairs without alarm. The matter was brought to the notice of the County Council, but the general tenour of their reply was to the effect that although they were entrusted with the duty of seeing that the water was softened to below 10 degrees of hardness, their obligations ended there. Strong representations were made to the Water Company by the Urban Council, but up to the present time nothing has been done to rectify these matters, which, in my opinion, are having a deleterious effect upon the community. The Wolverhampton Corrugated Iron Company have also complained of the inadequacy of the water supply. The West Cheshire Water Company have recently increased their rentals for baths, in consequence of which a large number have been disconnected. When approached on this subject they replied that the charges made for baths were in accordance with their scale authorised by their Act of Parliament. The total number of

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houses at 31st December, 1913, was 2,249 and in these, with nine exceptions, the piped water was in use. The nine dwellings derived their supplies from wells and collected rain-water, samples of which have been subjected to analysis, with the result that two were reported as unsatisfactory, two as hard but otherwise pure and one as satisfactory."

HALE URBAN DISTRICT.—"The water supply to practically the whole of the district is supplied by the North Cheshire Water Company from the Manchester Corporation Reservoirs at Woodhead and is satisfactory. There are only four springs in the district from which drinking water is obtained. During the year no new supplies have been laid on. At nine houses in which the supply (town's supply) was insufficient, pipes have been relaid and an ample supply of water is now obtainable."

HANDFORTH URBAN DISTRICT.—"With only a few exceptions water is laid on to every house from the Stockport Corporation Waterworks."

HAZEL GROVE AND BRAMHALL URBAN DISTRICT.—"The water supply from the Lyme reservoirs is good and plentiful and there is no fear of contamination."

HOLLINGWORTH URBAN DISTRICT.—"Hollingworth has a very satisfactory water supply in a spring rising high up the Arnfield Clough and nearly all the houses in the main street and streets off it are supplied from this source, connected by short service pipes, which are well tinned and no trace of lead has ever been detected in the water. Analysis has repeatedly shown the water to be of exceptional purity. In parts not supplied with the public service nearly every dwelling is in possession of a satisfactory private supply of drinking water."

HOOLE URBAN DISTRICT.—"There is an ample supply of good water, the whole of the district being supplied by the Chester Waterworks Company."

HOYLAKE AND WEST KIRBY URBAN DISTRICT.—"The entire district is well supplied with water by the Hoylake and West Kirby Gas and Water Company, Limited. The source of supply is deep wells in the new red sandstone at Grange Hill and Newton. The analyst to the Company reports that an examination of a sample of the water in June, 1913, had the following result:—

Total Solid Matter in Solution...	...	...	34.8
Oxygen required to Oxidize in 15 minutes	...	None	
" 3 hours	...	None	
Ammonia	...	...	None
Ammonia from Organic Matter by distillation			
with Alkaline Permanganate	...	...	None
Nitrogen as Nitrites	...	...	None
Nitrogen as Nitrates	...	...	0.4
Combined Chlorine	...	...	7.4

Expressed in Degrees.

Temporary Hardness	..	...	...	...	6.3
Permanent Hardness	...	...	...	...	6.3
					<hr/>
Total Hardness	..	...	...	...	12.6

“*Newton Supply*.—The water was clear, bright, colourless, odourless and contained no organisms or pathogenic germs. It was free from lead and copper and from solid matter in suspension. The results of the analysis indicate that the extremely high state of organic purity remains unaltered.”

“*Town Mains.*—The water was clear, bright, colourless, odourless and contained no organisms or pathogenic germs. It was free from lead and copper and from solid matter in suspension. The water is in every way an excellent one for drinking and domestic purposes.”

“There are three houses which are supplied by shallow wells and samples of water from these have been submitted to the County Analyst, who reports that all three are unsatisfactory.”

KNUTSFORD URBAN DISTRICT.—“This has been the subject of much special inspection and report for many years. The supply being in the hands of a private company, it is difficult to give recent and accurate information. It is, however, known that the ozonising plant, mentioned last year, was not retained in use.

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The Council regularly notifies the Water Company of any pollution of the stream noticed ; and the latter body undertakes the systematic inspection which is so necessary. The stream traverses the districts of three other Authorities before entering Knutsford ; and in fact it never is 'in' this district, as it forms the township boundary on one side."

LYME URBAN DISTRICT.—"The water supply is now owned and controlled by the local authority and is laid on throughout the district where possible, that is with the exception of a few outlying farms and cottages. The supply, derived from artesian borings, is pumped up to a water tower for delivery under pressure. The supply is constant and there was no shortage even during the most trying summer of 1911. Analysis gives the result of a good, potable water. Though somewhat hard, on analysis it is pure and gives rise to no definite ailment that I can find ; indeed the absence of rickets in the district may, I think, be in great part due to the lime content of the water."

MARPLE URBAN DISTRICT.—"The water supply of Marple is obtained from the Stockport Corporation, from Lyme and Kinder. The water is good in quality, although occasionally complaints are heard that it is brown, or reddish and throws down a deposit. I do not consider it injurious to health, if filtered, although it is unsightly. Some of the mains are very much encrusted from age. Some of the water mains, which have now been laid over 30 years, are badly encrusted and it will be necessary, in the near future, to take out these pipes and to lay new."

MIDDLEWICH URBAN DISTRICT.—"There is a good and plentiful supply of excellent water to nearly every house in the district ; only six houses, situated a long way from mains, are not supplied with water from the town's supply."

MOTTRAM URBAN DISTRICT.—"Considering the dry state of the weather during the summer months, the district has been well supplied by the Arnfield Springs. A certain amount of peat has been coming down the pipes. The water inspector was informed and the pipes flushed."

NANTWICH URBAN DISTRICT.—"The water supply is from Baddiley Waterworks. Pumping from the Merc again had to be resorted to for nearly two months in October and November. The pressure of water has been bad, owing no doubt to the increased amount of water used in the district. The trial bore hole at the new site at Madeley was completed early in the year and indicated a satisfactory strata for water supply. A contract was then

entered into with Messrs. Castle & Co. to construct the well and sink a permanent bore hole. At the end of the year the well had been sunk to a depth of 97 feet and the work was still progressing."

NESTON AND PARKGATE URBAN DISTRICT.—"The water supply is the property of the Council, who charge a very low rate for its use to the consumers within the district and also add considerably to their revenue by sales of water to a Railway Company. There is a constant supply pumped from a deep well in the new red sandstone and distributed by gravitation. In 1911 and again in 1913 a breakdown in the pumping machinery necessitated the obtaining of water from the Liverpool Corporation mains, which pass through the district from Lake Vyrnwy and with which the Neston mains have a connection which can be utilised when required. The new water supply from North Wales to Birkenhead will pass through Neston and the Council have arranged with the Birkenhead Corporation to use this water should they so desire.

"A sample from the Council's main submitted to the County Analyst was reported as 'a water of high a degree of organic purity.' The hardness, according to Clark's Scale, was 12 degrees before boiling and 3.5 degrees after boiling. The water appears to be softer than formerly, for analyses in 1874, 1895, 1896, 1897, all show 14 degrees of hardness; 1911, 13 degrees; 1913, 12 degrees. The public water supply has been laid on to the 10 new houses built and occupied in 1913. There are three cottages which are supplied by the piped water, but it has to be carried by the occupants for a distance of about half-a-mile.

"Four cottages were supplied by wells at the commencement of 1913, but two of these have been connected with the main in consequence of adverse reports on the wells by the analyst. In one case the report was: 'There is evidence of recent contamination and I cannot pass this water as satisfactory for drinking purposes' and in the other: 'This water is of very doubtful purity and I cannot recommend it for drinking purposes.' There are two other cottages supplied by a shallow well, the water from which is reported on as 'very hard (27 degrees), but otherwise of satisfactory quality and fit for all domestic purposes.' The consumption of water from the public supply was, in the years 1911—1913, as follows:—

1911	1912	1913
65,170,000 gallons.	62,142,000 gallons.	59,172,000 gallons."

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NORTHWICH URBAN DISTRICT :—“There has been no alteration during the year, the water supply remaining in *statu quo antea*, but a very decided step towards the much needed acquisition of additional water has been taken and application to Parliament for power to acquire water-bearing land about a quarter of a mile from the present springs at Cote Brook will shortly be made. The reasons which make this necessary, are that an additional reservoir is sorely needed, the present one at Heyswood only containing some three days supply when full. The additional one will be constructed at the pumping station and will give a far greater pressure over the mains than is possible at present. The whole of the water will be pumped and a new pipe line to Heyswood constructed. This will leave the present supply to continue its uninterrupted flow by gravity of some 400,000 gallons per diem and will not jeopardise the present pipe by forcing water through it under pressure by pumping. That it will greatly enhance the safety and health of the town scarcely needs further comment, than to state the fact that at times it is necessary to husband the supply by cutting off the source from 11 p.m. till 4 a.m.”

SANDBACH URBAN DISTRICT.—“The water supply comes from an upland source by two mains 10 inch and 7 inch, one being used at a time. It is taken to the Waterworks and treated with Clark’s process and is a constant supply. It has proved itself to be a very sound water in every way. It is proposed to build a new settling tank at the Waterworks in order to more efficiently treat the water seeing that the Council supply so many of the outlying districts.

“On Nov. 14th the Local Government Board held the customary inquiry into the Council’s application to borrow £1,500 for the erection of an additional reservoir at the Waterworks and the installing of an additional clear water pump and the Board’s sanction has since been received. These additions have become very necessary on account of the increased consumption of water which has taken place mainly in the townships of the Rural Council’s area which we supply with water. When completed the new reservoir will enable much longer time to be allowed in processing the crude water and the new pump will be a great advantage in coping with the increased demand.”

TARPORLEY URBAN DISTRICT.—“This district is supplied by the Liverpool Corporation from their Lake Vyrnwy supply, the water mains passing through this district. The out-lying parts are supplied by springs, dip-wells and ordinary wells.

All the supplies are constant and wholesome and fairly free from the risk of pollution. The Vyrnwy water is a very soft water and iron pipes are in general use. No contamination of the water by lead has occurred. No extensions have been carried out during 1913 and the district is well supplied with water, except Rushton village, which is about 300 yards away from its water supply and the same applies to seven cottages in Utkinton Lane. The owners of these cottages are being pressed to provide a better supply."

WILMSLOW URBAN DISTRICT.—"The new works at Kinder belonging to the Stockport Corporation were opened in 1912 and the district is now supplied from this source. The supply is constant, good and ample for all needs. No softening treatment is required. Some parts of the rural area are supplied from wells. No complaints were made during the year. A sample of water from a well was analysed. The report was unfavourable. The well was cleaned out."

WINSFORD URBAN DISTRICT.—"The water supply is obtained from Little Budworth and is spring water gathered and conducted through a 10 inch pipe to a reservoir situated in Whitby's Lane, in Over, with a capacity of one and a half million gallons. The total yield is 242,610 gallons per 24 hours. The supply is constant. The quality has always been pronounced excellent on chemical analysis. During 1913 several bacteriological analyses have been made which have revealed the presence of an undesirable number of *B. coli*. Careful examination of the 'springs' discloses the fact that the soil is extremely light and porous and that the surrounding land is heavily manured. The contamination is manurial and of no immediate danger to the public health; but it is highly undesirable and might be dangerous under certain unlikely, but possible, conditions; the Council is therefore giving the matter its most serious consideration."

YEARDSLEY-CUM-WHALEY URBAN DISTRICT.—"The water supply of the district continues satisfactory. Owing to the dry summer there has not been an adequate supply for the whole of the district, but it is satisfactory to know that the Council is aware of this fact and at present is making negotiations for a larger supply from the Stockport Corporation. It must be remembered that your district is a growing one and that the sewerage scheme is near completion and these are two strong additional reasons why I am of opinion that your water supply should be increased. There have been six connections made to the Council's system during the year."

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BUCKLOW RURAL DISTRICT.—“The only change during 1913 was a small extension of main at Dunham Woodhouses, to reach four cottages and a farm.

“A considerable part of Mobberley could be supplied by an extension of the mains of the Stockport Corporation from Wilmslow, that is, as far as engineering goes. Whether it would be financially possible is not known, but the question is to be considered in the near future. Mr. Metcalfe adds:—

“Water certificates were granted for 21 houses under the provisions of the Public Health (Water) Act, 1878, Section 6. Where the water supply was from wells samples were submitted to the County Analyst and a satisfactory report obtained before these houses were occupied or certificates granted. Where filtration was recommended by the Analyst the usual practice of requiring the owner to provide a ‘Pasteur-Chamberland filter’ for each house was adopted. Raingill’s Cottages and the adjoining houses in Henshall Lane, Dunham Massey, have now been provided with water from the new main of the North Cheshire Water Company.

‘Nine samples of water were submitted for analysis and one for bacteriological examination.’

‘The question of a public water supply for the township of Mobberley has been reported upon and is now under consideration.’

‘The water supply for the township of Carrington will be reported upon early in 1941.’ ”

CHESTER RURAL DISTRICT.—“This district is supplied by the Chester Water Company, by the Wrexham Water Company and by the West Cheshire Water Company. The out-lying parishes are supplied by springs, dip-wells and ordinary wells. These waters are fairly wholesome and sufficient, except in the parishes of Mickle Trafford and Ince. The water supply of Dunham Hill is settled and the work begun, arrangements having been made with Runcorn Rural District to supply from their waterworks at Helsby. Ince is still under consideration.

“The following extensions have been carried out during 1913:—

The Lache.—Six houses have been connected to the Chester Waterworks main.

Twenty new houses have also been supplied from the same source.

Sixteen new houses have been supplied from the West Cheshire Water Company.

A public watering pond at Thornton cleaned out.

Dunham Hill and Christleton village pumps repaired.

There have been eight samples of water chemically analysed.

There have been two samples of water bacteriologically analysed.

No contamination of the water by lead has occurred."

CONGLETON RURAL DISTRICT.—"There are several districts inadequately supplied with water. Mow Cop and Mount Pleasant have a few wells, but a public supply would be very beneficial as some of the houses are situated a long way from the nearest well. Mow Bank is very badly off for water. Hassall Green is still obtaining an intermittent supply. Dean Hill farms are very badly off; the tenants are very desirous of the water being extended to them. Cranage is not well supplied, the occupiers having to carry water some distance. The extensions that have been carried out are at Elworth, Bradwall, Betchton and Odd Rode; these constitute a great improvement."

DISLEY RURAL DISTRICT.—"The water supply is for the most part satisfactory and is derived from the Stockport Corporation Waterworks. The Council has approached this Corporation with a view to supplying Higher Disley from the same source.

"During 1913 there has been an extension of the Stockport main to Lyme Park gates in Red Lane and to new houses. About six old and five new houses have been connected to Stockport water supply. Some few houses in Disley and Furness Vale have water from private sources instead of from Stockport Corporation's main. The Council and Stockport Corporation are considering supplying Higher Disley with town's water."

MACCLESFIELD RURAL DISTRICT.—The Inspector reports: "Twenty-one houses were newly supplied from the Council's water undertakings. The number of houses now so supplied are as follows:—

Upton	48
Prestbury	66
Butley	67
Adlington	2
Tytherington	23
Taxal	128

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"In Poynton four additional houses were supplied from Lord Vernon's water mains, making a total of 563. In Chorley 43 houses and in Great Warford 26 houses, a Convalescent Home for a Manchester Hospital and a number of residential schools are supplied from the Stockport Corporation's water mains. In Eaton 29 houses are supplied from the waterworks of the adjoining Urban District of Buglawton. In Hurdsfield 80 houses are supplied from waterworks owned by Colonel Brocklehurst. In Sutton 104 houses are supplied from waterworks owned by Mr. Whiston. The water mains owned by Mr. Allen, in the township of Rainow, were extended 1,300 yards. Forty-one houses are now being supplied from these new mains, making a total of 95 houses supplied by his works. Fourteen houses in the townships of Butley, Rainow and Tytherington, which are indifferently supplied with water, are in close proximity to the water mains of the Bollington Urban District Council. Negotiations are in progress between the two Councils for a supply from the mains to these houses. Four new pump wells were sunk and 13 others were repaired, deepened or otherwise improved.

"The Local Government Board's sanction to a loan, where-with to lay the $2\frac{1}{4}$ miles of water mains in the township of Taxal was received and steps were at once taken to execute the work in the early part of the year. The mains were completed and tested by the end of June. On the 10th of July the sluice-valve controlling the supply from Chapel-en-le-Frith Rural District Council was closed and it has not since been opened. During the whole of the subsequent long continued drought the larger of the newly acquired springs sufficed by itself to maintain an uninterrupted supply to all the houses without a service reservoir. The Chapel-en-le-Frith supply failed to satisfactorily meet their own requirements. Had Taxal continued to be dependent on it, the situation would have been very serious. The two service reservoirs, which are part of the scheme approved by the Local Government Board, are to be constructed during the current year.

"Eleven samples of water were analysed chemically, six of which were reported as being in some degree unsafe for domestic use. In each of these cases the occupier was at once warned of the danger attending the use of it and steps were taken to either improve the supply or provide another one. One sample was examined bacteriologically and was reported to afford no evidence of pollution. A case of lead poisoning occurred in a man living at a small farm, the water supply to which was conveyed through 230 yards of lead pipe from

a spring well. A sample of the water was certified by the analyst to contain lead to the extent of 1.7 grains per gallon. The use of this supply was at once discontinued."

MALPAS RURAL DISTRICT.—"This district is supplied largely from the Liverpool Corporation main. The main runs through the town of Malpas which it supplies, also the parish of Bickley. Other parishes are supplied from public and private wells. The supply is constant and there are no complaints as to action on lead. There is a sufficient supply and the wells are fairly free from the risk of pollution. Two samples of water were chemically analysed during the year. Two new wells were sunk in your district during the year."

NANTWICH RURAL DISTRICT.—"The extension of a public water supply to Audlem and other townships in that part of the district has made no perceptible progress. With regard to Audlem I have taken samples from some of the pumps which are largely used as semi-public sources of supply and the reports of the bacteriologist are such as to occasion grave concern. In 50 per cent. of the cases the water showed signs of very grave pollution. I trust that the Council will press on the work of supplying Audlem and the other unsupplied townships with pure water.

"The Surveyor reports that new water-mains have been laid in Homeshaw Lane, Haslington, to supply the new small holdings for the Cheshire County Council. The total length of mains laid was 726 yards, which, added to 307,338 yards, the length already laid, gives a total of 308,064 yards now laid in this district. During the year 69 houses have been connected to the water-mains, giving a total of 3,779 houses at present supplied by the mains of this Council.

"An enquiry was held by the Local Government Board into a scheme for a proposed water extension to the Blackhurst Farm, Woodhey Hall Farm and the Holywell Farm, for Lord Tolleremache's trustees. Sanction has since been received and the work is now in hand.

"The scheme for the supply of Audlem, Hankelow, Hatherton, Buerton, Coole Pilate, Newhall, Wrenbury, Sound, Dodecott, Broomhall, Woodcote, Austerson and Baddington has been completed. Plans, sections and estimates have been transmitted to the Local Government Board and they have decided to hold an enquiry into the same. The total cost of this scheme is £22,588.

"An application was received from the Small Holdings Committee of the Cheshire County Council for an extension of the water-mains in Ridley township to supply their new small

holdings. Estimates were prepared and submitted to the County Council, but as yet no instructions have been received to proceed with this work."

NORTHWICH RURAL DISTRICT.—"Considerable activity has been manifest in the provision of proper water supplies over this extensive district, which with its scattered farms and cottages is a costly one to carry service pipes throughout its area.

"Seventeen samples of water have been analysed at the Public Health Laboratory, Manchester, and some 39 neutral samples have formed the basis of "various investigations." The double examination, *i.e.* chemical and bacteriological is invaluable in the case of rural wells and springs.

"The Barnton springs which are near the surface have been examined very carefully and one which was liable to pollution cut off altogether and in this village some 378 yards of 3 in. mains have been laid for the supply of some 60 proposed new dwelling-houses. This means that an additional supply is becoming necessary in the near future, and on the representation of the Medical Officer of Health to the Sanitary Authority that a large quantity of water was running to waste at no very great distance, an attempt was made to procure it, but the landowner refused to sell, as it is reserved for 'trade purposes.' An extension of a $\frac{3}{4}$ inch pipe for some 534 yards has been made at Wincham to supply a mill and a cottage. At Weaverham a 2 inch pipe has been carried some 830 yards to supply a farm and two cottages. A scheme for the taking of water from the Middlewich main at Davenham and carrying it to supply Byley, Whatcroft and Rudheath, has been placed before the Local Government Board, and is awaiting the application of the Northwich Urban District for Parliamentary powers to supply Rudheath from a new source which they request permission to obtain. Whoever supplies this district it is one where a water service is very much required, as also are Allostock and Lostock; the outlying portions also of Delamere and Oakmere are not too well supplied with this necessary article, the neighbourhood of Quarry Lane and the Yeld having many houses with a poor supply and that at some distance."

The Surveyor reports:—

Cuddington, Hartford, Weaverham (Sandiway) and Oakmere (part).—"These works not only supply the above townships but also provide a supplemental supply to the Weaverham (Village) and Acton Waterworks. The works have been painted and decorated and the pumps thoroughly overhauled. The tower

tank, reservoirs, pump well and wells at the springs have been thoroughly cleansed, and the works are now in very good order. The yield of the springs is better than has been recorded previously. About 35,000 gallons per day, the average surplus, is permitted to run into the stream which passes the works by means of the pump well overflow.

“The districts served are largely of the residential or farming type and as a consequence many large houses with baths and water closets and farms with refrigerators have to be supplied. Many motor cars are kept in the district and these add considerably to the consumption of water. The total number of houses supplied is about 458 with an estimated population of 2,748. The average consumption per head of population served after making the necessary allowance for the supplemental supply to Weaverham and Acton, works out at 27 gallons, which is abnormally high for the rural district. The question of increasing the capacity of the tower tank is receiving the consideration of the Council.

“Extensions of mains have been carried out in connection with these works along the Weaverham road from Hartford Beach for the benefit of a new farmhouse. The owner, Lord Barrymore, contributed the cost of an inch tube and as the Council were of the opinion that a 2-inch main would provide for future developments it was decided to carry out the work on these lines. The value of the Council's action has been proved, for two cottages situated in Hodge Lane without a supply previously have now been connected to this new main at the owner's expense. The length of the 2-in. main is 830 lin. yards. In order to provide a supply suitable for fire purposes near his house, J. F. L. Brunner, Esq., M.P., agreed to contribute the whole cost of substituting a 3-in. main for the existing 2-in. main in Littledale's Lane, Sandiway (Weaverham). The work has been carried out. The mains have also been extended 833 lin. yards for the benefit of two farms and six cottages at Ravenselough, Cuddington, which either had no supply or a supply bad in quality.

“*Barnston.*—Owing to several sources of supply having been cut out permanently because of the presence of bacillus of the coli type in such supplies, these works are now severely handicapped. The loss thereby sustained has necessitated a greatly increased demand on Messrs. Brunner, Mond & Co's. Cogshall Water Works, from which the township obtains a supplemental supply delivered at the pumping station. The average daily call during the last few months has been about 17,000 gallons, but on certain days considerably more is required. The yield of the Council's springs is now only 16,000 gallons per day and the

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average daily demand about 33,000 gallons. Of course the Little Leigh springs will supply a certain portion of the district, but only in a very unsatisfactory manner, as the pressure is not sufficient to supply some of the houses above ground floor and others have to resort to pumps which were fixed to the taps before the tower was erected. Nevertheless, in order to keep down expense, this system has had to be brought into operation on several occasions.

“It must be borne in mind that building developments are proceeding very rapidly in the township, about 60 houses fitted with baths and waterclosets, being in course of erection. The demand for water will therefore be greater in the future and the additional daily quantity required will be about 5,000 gallons. This, however, does not provide for any future development and the Council decided after carefully considering the above together with the fact that the tower tank is insufficient both in capacity and height, to approach the Liverpool Corporation with a view to a full supply for the township being obtained from their aqueduct, which passes within a few miles of the district and which would remove the necessity for a tower. The Council now await the Corporation's consent and terms.

“The mains have been extended along the street known as Broadway for a distance of about 378 lin. yards, 3 in. diameter, for the benefit of the new property previously referred to, the cost of which the owners, Messrs. Brunner, Mond & Co., will bear. Three circulating mains 2-in. diameter have also been laid along Mond Street and back Nursery Road, thereby greatly improving the supply in this locality.

“*Lostock Grahm.*—These works have maintained a continuous supply throughout the year. The supplemental works at Lostock Hollow have been constructed and all with the exception of the pumping plant is very satisfactory. Up to the present time the engine has failed to fulfil the maker's guarantee and the Council are negotiating with them on the matter. It is expected however that the works will be in order before any demand is likely to be made for this additional supply of 8,000 gallons per day. The old reservoirs have a capacity of 39,000 gallons and the added reservoir accommodation is equal to 23,000 gallons, making a total of 62,000 gallons, or almost 2½ days supply. The yield of the springs at the old works is 31,000 gallons per day and this added to the yield from the new source makes a total daily yield of 39,000 gallons. A day's supply to the township is 26,000 gallons. It will therefore be seen that the supply exceeds the demand by 13,000 gallons per day.

“The capacity of the tower tank will ere long have to be considered with a view to its enlargement. Its capacity is only 12,000 gallons and therefore is equal to less than half one day’s supply. It is also somewhat too low to afford a continuous supply to cisterns fixed in the roofs of some of the houses in the high part of the district. A scheme for the extension of the township’s mains along Lostock Green and Moss Lane has been prepared and approved by the Council subject to the owners of property to be benefited contributing reasonably to the cost of same. The scheme will link up seven farms and four cottages which are at present not very favourably situated as regards water supply. Difficulty has arisen however with regard to owners’ contributions, only one out of the six having agreed, viz.:—Messrs. Brunner, Mond & Co., whose share, in proportion to the rateable value of their property to be benefited amounted to £311. The full cost of the scheme is estimated at £510 and when it is considered that the remaining balance is divided amongst five other owners and also that the company are prepared to contribute the whole sum apportioned to them, the offer must be looked upon as a liberal one. A committee of the Council have met the Parish Council and explained the Council’s proposals in order that the remaining owners may have a better opportunity to understand the scheme. Meanwhile further developments are awaited.”

“*Weaverham (Village) and Acton.*—These works have by means of the supplemental supply from Sandiway Water Works provided a continuous supply to the districts. It is supplemented as a rule, except when the special necessity arises, during the week ends. The total quantity taken in this way for the year amounts to 345,000 gallons, or on the average a little over 945 gallons per day.”

“*Wincham and Marston.*—The works continue to provide a satisfactory supply to the districts. The usual troubles have been experienced during the year, viz., the fracturing of mains and services through subsidence. These, happily, have been discovered in good time and unnecessary waste avoided. The mains have been extended a distance of about 534 lin. yards to a mill and cottage situated at Cranage Brook at a cost of £31, the owners of the property contributing £15 towards the expense. The supply for these properties was previously obtained from a drain pipe protruding from the ground which was obviously a dangerous source, being little more than land drainage.”

“*Moulton, Davenham and Leftwich.*—The districts have been well supplied during the year. The supplemental supply obtained from the Middlewich mains is used as economically as possible and

as a rule, only on Sundays, when the Middlewich demand is low. Thus our own reservoir is fully charged on Mondays; 1,632,000 gallons have been taken in this way during the year or an average of a little over 4,471 gallons per day. This shows a saving of 229,000 gallons as compared with the previous year. The whole of the water pumped at the works has passed through the oxidising pressure filter."

"Oakmere (part) and Delamere.—The water supply to these districts is obtained from the Liverpool Corporation's mains. In lieu of the old 2-inch meter the Corporation have fixed two meters operated by an equilibrium valve, the larger one being a 3-inch and the smaller one 1-inch. When the demand is high the large one automatically comes in use and when the demand is low the small one. It is a point worthy of notice that the larger one has passed twice as much water as the small one, thus proving the Council's contention that at times the old 2-inch meter was not equal to the demands made upon it."

"Clive, Stanthorne (part) and Wimboldsley (part).—The supply to these townships from the Winsford Urban Council has not been very satisfactory as regards pressure. Interference with the supply for repairs, &c., or excessive demand in the town, cause these townships to suffer at times severely. The dairy farms dependent on the supply are often seriously inconvenienced, at times not obtaining a supply for many days together; a certain amount of danger and annoyance is caused by cisterns fixed in the roofs of some of the houses (on which hot water or sanitary convenience supplies depend). This clearly points out the advisability of obtaining the supplies for townships, where it is essential to depend upon a neighbouring authority, at such a point or place where there is not likely to be any serious or frequent interference with the supply, or, in other words, the point of connection should be at a place where no thickly populated area will be likely to detrimentally affect the continuous pressure to the Rural District.

"Byley, Rudheath and Whatecroft.—It was hoped that this scheme would by now have been actually carried out or at any rate in progress. The Local Government Board enquiry has been held and the Board have since stated that they were prepared to approve the scheme, but before doing so they wished to know what the Council intended to do with regard to existing mains laid in the township of Rudheath. The Council, after negotiating with the Urban Council of Northwich, who claim the ownership of the pipes, decided to lay new mains and therefore asked for an increased loan for the purpose. Since then, however, the Local

Government Board have informed the Council that, owing to the Urban Council of Northwich seeking statutory powers in regard to water supply in the township of Rudheath, they deferred further consideration of the matter until Parliament had given its decision. This has blocked the Council's endeavour to provide a supply to districts at present very badly served in this respect, as a scheme for the township of Byley and Whateroft is too great a burden on parishes with such low rateable values. To omit from the scheme the township of Rudheath renders such scheme impracticable. The scheme not only provided for a supply in the townships referred to, but by means of owners' contributions was intended to be extended not only to the full limits of Byley and Rudheath, but possibly also to adjoining townships. A straight line across the township of Rudheath measures over four miles, only the first half-mile of which adjoining the Northwich Urban boundary has a water supply. Thus by far the greatest area of the district is either without a supply at all or has to depend upon shallow wells of doubtful purity and in other cases wells of known impurity.

“Plans were recently presented for building a cottage in Byley, but the Council insisted that a supply of water must be obtained first, as until they were satisfied there would be a plentiful supply of pure and wholesome water such plans could not be passed. A borehole was sunk on the site without success, no water being found. A new site was selected and another borehole sunk ; at this place water was found, but it would not pass the analyst. The owner complained that he had no alternative but to abandon the idea of building in Byley until a water supply is provided by the Council. This clearly indicates the necessity for a public scheme, and considering the fact that it is an urgent necessity over the whole of the three townships, it is to be regretted that the matter has been hung up in this manner, after so much time and consideration has been devoted to the proposed scheme by the Council. To my knowledge it has received great attention during the last three years and I am informed that it has been under the consideration of my predecessor to provide a suitable scheme for the districts for the last 17 years of his term of office, but owing to difficulties then existing he was not able to produce a practicable scheme. Even the scheme now proposed would not be financially practicable had not Col. C. H. France-Hayhurst and two other owners offered to contribute liberally to the cost and the fact that the Middlewich mains, to which it is proposed to connect, carry a high pressure, thereby enabling the Council to use mains of less size than would otherwise be necessary.”

“ Little Leigh.—The trial well which the Council decided to sink to replace an existing public well has been sunk, but the spot decided upon did not reveal the presence of an old filled up water course within a few feet of the site until actual operations were commenced and it had in consequence to be abandoned. A new site has been selected and the work will be proceeded with as soon as practicable.”

“ The Inspector reports :—Fifteen samples of water, used for drinking purposes, have been submitted to the Public Health Laboratory, Victoria University, for both bacteriological and chemical analysis and one for chemical only and one sample submitted to the County Analyst, making 17 in all. Of these 13 were certified bad and four passed as suitable for drinking purposes. The 13 supplies certified bad were dealt with as follows :—Two samples were from two new wells put down by the owner of cottages in Cogshall and being certified bad were abandoned and properly constructed rain water tanks provided ; two samples were taken from the supply to a farmhouse at Little Leigh and with the view of improving the supply, the owner has re-constructed the whole of the sanitary arrangements and re-built the well, which is being pumped out daily and now awaits re-analysis. Two of the samples were from separate wells on two farms in the vicinity of each other at Wincham and as it was considered impossible to improve the existing supplies, the owner is considering the offer of the Council to extend the township mains as the only possible solution of the difficulty ; two other samples were from two wells on a farm at Crowton, but as the construction of the wells was thought to be the cause of the pollution indicated on the certificates of analysis, the owner is going to considerable expense in boring, which if successful, will provide a solution of the difficulty here. One sample was from a new well put down to replace an existing well supplying six cottages at Little Leigh and being unsatisfactory has been taken out and a more favourable site chosen ; two samples were from two wells in connection with the Barnton Township supply found two years ago polluted by an overflowing pit and was disconnected from the supply to the works ; the results of this re-analysis have been to finally abandon the wells as dangerous owing to liability to pollution ; one sample was from a new well put down at Allostock and after analysis abandoned as a supply for drinking purposes and a properly constructed rain tank is being constructed to provide the only safe supply in the vicinity ; and one sample was taken from a well at a farmhouse in Little Budworth, but before giving a final opinion the bacteriologist has requested a further sample, which is to be sent at an early date in the new year. Of the four samples

passed as suitable for drinking purposes, it was stated that the action on lead of one of the samples taken from a farm at Little Leigh was greater than should be allowed ; this was rendered safe by the removal of all lead from contact with the water and the remaining three samples taken from wells at Delamere, Allostock and Byley were approved by the Council. Certificates under Section Six of the Public Health (Water) Act, 1878, have been granted by the Council to the owners of 35 new houses completed during the year, 11 of which are at Barnton, four at Cuddington, two Cogshall, three Delamere, three Hartford, two Rudheath, two Wineham and eight Weaverham (Sandiway); 33 of these are supplied from public supplies and two supplied from rain water tanks after it had been proved to the Council by boring and well sinking, that other suitable supplies were not available in the locality."

RUNCORN RURAL DISTRICT.—"The Runcorn Rural District consists of 40 townships, a considerable proportion of which either adjoin or are within the statutory limits of distance (for purposes of water supply) from some local authority other than your Council, and from whom they can obtain a sufficient and continuous supply of first-class drinking waters. Thus we find that :—

1. Halton and Weston (with Weston Point) are supplied by the Runcorn Urban District Council with water from the Liverpool Corporation Vyrnwy Water Mains, this water being first delivered to Runcorn Urban Area and thence distributed to these townships.

2. Acton Grange, Appleton, Daresbury, Grappenhall, Hatton, Latchford Without, Moore, Newton-by-Daresbury, Stockton Heath, Stretton, Thelwall, Walton Inferior and Walton Superior, are all supplied by the Warrington Corporation Water Mains ; and—

3. The Ashton Estate, the Norton Estate and the townships of Aston, Dutton, Preston o'th'-Hill, Sutton and Norley, are all supplied by your District Council direct from the Liverpool Vyrnwy Water Mains.

"The above townships are all supplied by local authorities, other than your Council, with waters derived from sources outside your district.

Derived from sources within your district there are the following water supplies :—

4. Frodsham and Frodsham Lordship are provided with an excellent supply, constant in character, which is obtained from a deep well and bore-hole in red sandstone.

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5. Helsby is also supplied by a deep well and bore-hole in red sandstone.

These two supplies are provided and distributed by the District Council.

6. Manley has a private water supply to 56 houses, but this water supply has now been purchased by the District Council.

7. Budworth has a private water supply to 69 houses and—

8. Grappenhall has a private water supply to 36 houses.

Thus, out of approximately 6,525 houses in the area of your Council, about 5,037 houses are provided with continuous supplies of first-class drinking waters.

9. The remaining 14 townships are mainly supplied by private wells, public wells, running pipes from springs, wells and springs, or from combinations of two or more such supplies. These townships are Alvanley, Antrobus, Aston Grange, Bartington, Clifton, Crowley, Keckwick, Kingsley, Kingswood, Newton-by-Frodsham, Seven Oakes, Stockham, Whitley Inferior and Whitley Superior.

“From the foregoing, it is seen that your district contains 40 townships, 26 of which are supplied a constant supply of drinking water and the chemical analysis of all these public water supplies indicate that they are as good as can be obtained, whether they are obtained from other local authorities, or from sources within your own area.”

TARVIN RURAL DISTRICT.—“The northern portion of the district is supplied partially by pipe supply and partially from public and private wells. The parishes of Ashton, Mouldsworth, Kelsall, Willington, Becston, Tilstone Fearnall, Tiverton, Saighton and Waverton, comprising about 410 houses, are supplied by pipe; the remaining parishes, with about 1430 houses, from wells. The southern portion of the Tarvin Rural District is supplied, as to the parishes or parts of the parishes of Aldford, Buer-ton, Churton-by-Aldford, by the Wrexham Waterworks; the remaining parishes by springs and deep and shallow wells.

“The following extensions and improvements have been carried out in the Northern Division:—

- 1.—To two new houses at Beeston from the Beeston and Tiverton water main.
- 2.—To four cottages at Tiverton.
- 3.—A new tube well has been made at Willington and a pipe supply to Tirley Garth.

“The following extensions and improvements have been carried out in the Southern Division:—

New tube wells at—

Aldersey one; new pumps two.

Broxton two and a new barrel well; new pumps two.

Burwardsley two and six new pumps fixed.

Coddington one and new pump.

Handley one and two new pumps.

Newton three and three new pumps.

Stretton one and new pump.

Tattenhall two and two new pumps.

Churton-by-Farndon—New barrel well and pump.

Carden—New pump fixed.

New pumps at Tilston and Shocklach.

New barrel well at Tilston.

“Thirteen new tube wells were made and three new barrel wells sunk in all. Nine existing wells have been cleaned out and repaired. Three underground soft water tanks have been built. Three springs protected, covered and supplied with pump, one new cistern for public use built in a wall, one new supply to a farmhouse from a spring by gravitation. In all 23 new pumps have been fixed.

“Two houses at Woodside, Ashton, are without a proper supply and two houses at Mouldsworth. These houses could easily be supplied from the water main, the same owner owning cottages and main. Farndon, Burwardsley, Broxton, Tilston and Harthill water supplies you have had before you for consideration. The existing water supplies are fairly free from the risks of pollution and no contamination by lead has occurred.”

TINTWISTLE RURAL DISTRICT.—“Tintwistle is supplied from its own reservoir, situated about one and a half miles from the village. It is both plentiful and good.

“Matley (that portion situated near the Stalybridge tram terminus) is supplied from springs, which run into a reservoir situated at Gallows Clough. Several complaints were made regarding this supply during the summer months. The springs were nearly dried up owing to the want of rain. Brook water was run into the reservoir to keep up the supply. I analysed a sample and found it free from any contamination. Some improvements have been carried out in the reservoir. The farms situated in the area are supplied with water from springs adjacent to the houses and they also suffered from the drought.

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“Hattersley :—The district is composed chiefly of small farms, each having its own water supply from springs in close proximity to the house. No complaints have reached me with regard to any of the water from these springs.”

The Inspector reports :—“During the abnormally dry summer the water supplies in parts of the parishes of Hattersley and Matley have in several instances given out in the outlying portions. Of course the summer was an exceptionally dry one and in one instance I was informed that a period of over twenty years had elapsed since they had been so short of water. As no doubt you are aware, it has been the same all over the country. As instructed by you, I hope to be able to present to you my report later on as to the sources of supply, quality and quantity of available water for these portions of the district.”

WIRRAL RURAL DISTRICT.—“Two townships, viz., Prenton and Noetorum, are supplied by the Wirral Waterworks Company and 29 townships derive their supply from the West Cheshire Water Company. Moreton, Saughall Massie and Grange are supplied from the West Kirby Waterworks and Bidston from Birkenhead. By the terms of the West Cheshire Water Act, 1911, the company have to supply water softened to not less than 10 degrees of hardness on Clark's scale from the Hooton Pumping Station. The County Council are the authority entrusted with the duty of ascertaining that this undertaking is carried out. From the analyses of two samples taken from different places within the limits of the company's area of supply in the Rural District it can be concluded that the hardness is reduced by the softening process employed by the company to 9 or 9.5 degrees. Both samples contained free carbonate of soda derived from the permutit system of water softening. In the autumn a certificate of analysis of Hooton water was sent to me, which on the subject of plumbo-solvency stated that ‘in two hours at a temperature of 85 degrees C. it dissolved lead equivalent to 1/10th of a grain of lead per gallon. In 24 hours at 70 degrees C. it dissolved lead equivalent to 1/14th of a grain of lead per gallon.’ On receipt of this certificate I took four samples of Hooton water and had their plumbo-solvency tested under varying conditions, with the result that in the opinion of the analyst ‘these waters are not only, practically speaking, free from lead, but have very little plumbo-solvent action.’ Blank tests carried out with Manchester tap water under identical conditions showed that the Hooton samples gave very much better results.

“An enquiry has been made into the water supply of any house which was not obtained from piped water, with the following results :—

WATER SUPPLY—SEWERAGE AND SEWAGE DISPOSAL.

“Irby Mill Hill Well.”—This supplies nine dwellings, two of which are farm-houses. The sample was certified ‘a very good sample of water and fit for all domestic purposes.’

“Barnston Wells.”—Four surface wells supply four cottages and the samples all afforded evidence of previous sewage contamination.

“Puddington Cottages.”—The supply shewed evidence of objectionable contamination.

“New Houses, Ness.”—The water contained heavy traces of vegetable organic matter and the analyst recommended that it should be filtered before use.

“Little Sutton.”—Three water supplies in this village were considered unsatisfactory on analysis.

“Five other analyses of water of an unsatisfactory character in use as a domestic supply have been received. In all these cases the Council are taking steps to ensure a proper and uncontaminated water. In all there are 46 houses, which obtain their supply from a source other than that of the piped water. A new well has been bored to a depth of over 300 feet in the new red sandstone at Clatterbridge and the water is certified by the County Analyst to be ‘of a high degree of purity’ and the bacteriological examination is highly satisfactory. It is interesting to record that this water has only a total hardness of about six degrees, which contrasts very forcibly with the 19 degrees for Hooton water.”

Section IX.—Sewerage and Sewage Disposal.

A considerable amount of good work has been done during 1913 in the matter of providing additional sewers and maintaining in good order those in existence, besides attending properly to the disposal of the sewage thus collected. But there is a great deal remaining to be done and amongst the more urgent of these I would name the following:—

Congleton Municipal Borough—Astbury Marsh, West Heath and Dancinshaw are stated to be without a proper system of sewers. Two factories in the borough on the water-carriage system deliver their sewage untreated into the river and some difficulty will be found in remedying this.

SEWERAGE AND SEWAGE DISPOSAL.

Middlewich Urban District—Seven houses at Cledford Bridge are without a proper system of sewers.

Sandbach Urban District—The outlying areas of Wheelock and Coldmoss Heath have no proper system of sewers.

Hoole Urban District—The Piper's Ash area is inadequately sewered.

Mottram-in-Longdendale Urban District—Here the Mottram portion of the area has water-closets emptying into cesspools which are emptied about once a month. A great improvement would be effected if these could be connected to the sewers and the cesspools abolished.

Compstall Urban District—A proper scheme of sewerage and a sewage disposal scheme are required here in order to prevent nuisance to the village.

Nantwich Urban District—The Council should be once more strongly urged to press forward with this scheme, which has been so very long in hand.

Chester Rural District—The Council should press forward with their schemes of sewerage and sewage disposal at Great Saughall and Mickle Trafford.

Congleton Rural District—A scheme of sewerage and sewage disposal is required at Thurlwood and Mow Bank.

Malpas Rural District—The three Outfall Works here need some slight alterations and a better arrangement for regular and systematic attention.

Nantwich Rural District—The Council are proceeding as rapidly as possible with their scheme for Haslington and Crewe Green and have dealt with the bad conditions prevailing at London Road, Willaston. Their attention should be directed to the sewerage of Bunbury.

Runcorn Rural District—The sewerage of Moore is believed to be in hand.

Tarvin Rural District—The question of the sewerage and construction of sewage disposal works at Farndon and Tattenhall is receiving some consideration by this Council.

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Hyde Municipal Borough—The Hallbottom district of Newton is still without a proper system of sewers.

Cheadle and Gatley Urban District—The agricultural areas of Styal Road and Outwood are still without a proper system of sewers.

Handforth Urban District—A complete scheme for sewerage of this district is believed to be well in hand.

Marple Urban District—Arrangements have now been made for the sewerage and sewage disposal of the Low Marple area.

Wilmslow Urban District—The rural parts of Morley and the Hough are without a proper sewerage system.

Winsford Urban District—A new sewer has been laid in Station Road and a number of ventilating shafts have been erected to take the place of surface ventilators.

Yeardsley-cum-Whaley Urban District—The sewerage of this district is believed to be virtually complete. The Council should in my opinion extend the system to Stoneheads and Hockerley Lane.

Bucklow Rural District—The disposal works at Northenden are to be enlarged and reconstructed. Works of sewerage are proposed for Baguley, but delay has been caused by the necessity of providing for disposal of the sewage before its discharge.

The hamlets of Parkgate and Peover Heath in Peover Superior require attention. In the township of Northen Etchells sewers are urgently needed for Stonepail, Moss Nook, Hey Head and Heald Green. Some attention is apparently needed in the township of Mobberley.

I append various observations of the District Medical Officers of Health on these questions.

CONGLETON BOROUGH.—“No alterations or additions to the outfall works were found necessary and the effluent was analysed several times and found to be satisfactory. A few of the outlying districts are still without sewers and a few of the back streets in the town, but the number is yearly being lessened. There is no pollution from the public sewage works. The River Dane is polluted by the effluent from Silversprings Bleach Works in

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Buglawton, by the discharge of the water closets of two Congleton factories into it and slightly by sewage from some of the outlying and distant parts of the district. The parts of your district still without a proper system of sewers are Astbury Marsh, West Heath, Dancinshaw."

CREWE MUNICIPAL BOROUGH.—"There is a proper system of sewers throughout the borough and the sewage is disposed of by broad irrigation on the Corporation Farm and by the double contact method to a small extent. The new sewage works described in last year's report are not yet in use, but will be opened in 1914. The delay has been due largely to the difficulty experienced in obtaining a sufficient quantity of suitable media for the percolating filters. The successful working of these bacterial beds will remove one of the sources of the pollution of the Valley Brook, as the land at present in use for sewage farm purposes is quite unsuitable owing to the nature of the soil and the length of time it has been utilized. No new sewers were laid or sewer ventilating shafts erected during 1913."

HYDE MUNICIPAL BOROUGH.—"There are 20 miles, 3 furlongs and 61 yards of public main sewers and 12 miles, 3 furlongs, 22 yards of private street sewers in the borough. The Hallbottom district of Newton is still without a proper system of sewers. The sewage is treated on the bacteriological system with the Candy-Whittaker automatic filter. There have been no complaints at the outfall works and no alterations or extensions have taken place during 1913."

STALYBRIDGE MUNICIPAL BOROUGH.—"The older portions of the borough are now well sewered, and extensions are constantly being made into the more outlying portions of the town. The sewage is disposed of along with that of Dukinfield at outfall works situated at Bradley Hurst, in the township of Dukinfield. The sewage farm has an area of $63\frac{1}{2}$ acres, and the average dry weather flow of sewage coming to the works from the combined districts is about two million gallons per 24 hours. The sewage received at the works passes to a screening chamber, where coarse suspended matter is arrested by a grating and removed by hand rakes. Leaving the screening chamber the sewage has mixed with it alumino-ferrie and ferrozone and then passes either into large sedimentation tanks or into roughing filters and then is treated on seven large percolating beds and in part on land.

"These arrangements are only sufficient to deal satisfactorily with about two-thirds of the normal flow of sewage, besides which

there is the storm water to be dealt with, so, to provide for the satisfactory treatment of these additional quantities the Joint Sewerage Board are at present carrying out sundry alterations and additions to the works.

“The large 3ft. sewer bringing the sewage to the screening chamber has been duplicated and new detritus tanks are being constructed and equipped. Two new storm water settling tanks are being constructed on the low-lying land adjoining the river. These will have a total capacity of 600,000 gallons and will receive a part of the sewage after it has left the screening chamber and has been treated with alumino-ferric and ferrozinc. The present sedimentation tanks have been added to by the construction alongside them of one long rectangular tank, 250 feet in length and 50 feet in breadth, with a capacity of 600,000 gallons, in place of four pyramidal tanks which were contemplated and would have had a capacity of only 200,000 gallons. Beyond the present roughing filters, five new circular percolating filters, seven feet in depth and of an area of 616 square yards each are being constructed, over which the sewage is to be distributed by means of rotating arms. Between the present large percolating beds and the river on the low-lying sewage-logged portion of the farm, which has up to now served—as well as it could—as an irrigation area for the effluent from the percolating beds, are being constructed two Humus tanks, 3ft. 6in. in depth and of a capacity of 200,000 gallons, to intercept any suspended matter in the effluent immediately before its final outlet to the river.

“The distribution of the sewage upon the large percolating beds by the Coombe’s sprinklers has not always been satisfactory, owing to the sprinklers at times getting choked and becoming inefficient, or even inactive, from corrosive action of the sewage, or from the rapid formation of spiders’ webs around the sprinklers while the bed is having its periodical rest. In order to obviate this difficulty in connection with one of the beds, two 500-gallon hydraulic rams, to act automatically, were put down as an experiment to force the sewage through the sprinklers so as to clear them and enable them to act more continuously, but they have not been an entire success, the alternating arrangement not always working satisfactorily. Moreover, the Coombe’s sprinklers have mostly been replaced by a form of sprinkler devised by Mr. H. W. Stafford, the manager of the works. The sludge deposited in the sedimentation tanks is drawn from the tanks and ejected into a sludge well, from which it is conducted to large sludge-presses which convert it into a satisfactory sludge cake, which has been found to be of no little value as a manure.

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“The sewage from the district of Matley (under the Tintwistle Rural District Council), adjoining the Mottram terminus of the Stalybridge Borough, is but very imperfectly dealt with, and the effluent enters a stream in our borough. This sewage must of necessity gravitate into our borough and I have for the past few years advised its reception into our sewers, so that it might be efficiently dealt with along with our sewage at Bradley Hurst. It is but quite recently that the Joint Sewerage Board, who had hitherto steadfastly refused to accept this sewage for treatment, gave way upon this matter and decided to receive and treat this sewage for a certain annual payment, this decision being mainly influenced by the intervention of the Local Government Board.”

ALSAGER URBAN DISTRICT.—“Considerable difficulty has been met with in sewage disposal owing to the erection of the new works on the existing site. The land has been utilised as far as possible and when ready the detritus tanks and screening chambers were put into operation and settling was carried on temporarily in the storm tanks, before the sewage was discharged on to the land, which will be eventually used as the storm water area. The new sewage disposal works are nearing completion and will be opened early in 1914.

“The sewers have been well looked after. New sewers have been laid to meet the requirements of the Linley district. An extension has been made in the Lawton Road sewer.”

ALTRINCHAM URBAN DISTRICT.—“The treatment of the sewage of the district is carried out at the Council's farm at Dunham Massey by sedimentation tanks and land filtration. A commencement of separating the surface water from sewage has been made on the east side of the district, with the object of relieving the sewers during storm times and further work in this direction is contemplated immediately. A scheme for the extension of this work is now before the Local Government Board. As regards the sufficiency of the arrangements at the sewage disposal works an expert engineer is at present engaged reporting upon this question and additions and improvements are contemplated.”

HIGHER BEBINGTON URBAN DISTRICT.—“The district is sewered throughout, except a few outlying residences. The sewers are flushed periodically. The outfall is into the River Mersey through the sewers of the Lower Bebington District by arrangement with the Council of that area.”

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LOWER BEBINGTON URBAN DISTRICT.—“There is an efficient system of sewers which receive sewage not only from the district, but also from Higher Bebington, Spital-cum-Poulton and part of Birkenhead. There is no method of purification utilised. The crude sewage at the southern outfall is retained in a tank with a penstock valve and is then discharged into the tidal waters of the Mersey. A record of the depth of sewage retained in the tank is kept from day to day and is brought before the Health Committee at each of its monthly meetings. The construction of sewers during 1913 comprised the laying of 600 yards of main, 1,062 yards of large concrete surface water culvert and 161 yards 24-inch pipe surface water sewer.”

BROMBOROUGH URBAN DISTRICT.—“The more urban parts of the district are well sewered. The sewage is treated in septic tanks and contact beds. A re-construction of the sewage disposal works at Dibbinsdale has been carried out, so as to cope with the increased work required of them and to bring them into line with more modern requirements. A sample of effluent taken when these beds were known to be at their worst, was analysed and was found to require a greater amount of oxidation by filtration. From the Tile Yard Disposal Works a sample of effluent was taken under similar conditions as those referred to in the Dibbinsdale sample and similarly a higher degree of oxidation was found to be necessary to obtain a satisfactory effluent. On analysis later, these effluents were found in order.

“From Bromborough Pool Village and works the sewage is discharged into the Mersey at low water mark. From the Mersey Chemical Works and from the 15 cottages connected with the powder magazines the sewage is passed directly into the river. Some of the large residences have provided their own installations to deal with their sewage and pass the discharge through filter beds.”

CHEADLE AND GATLEY URBAN DISTRICT.—“Although the original scheme was completed several years ago, additions have been made to it as the district has grown. During 1913 a sewer was laid in Finney Lane and connected with the main sewer running down the Wilmslow Road, the length of which was 1,033 yards. Styal Road and Outwood district, which are agricultural areas, are the only ones in the district without a proper system of sewers.”

ELLESMERE PORT AND WHITBY URBAN DISTRICT.—“The River Gowy forms part of the eastern boundary of the district and its waters

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are polluted by house drainage. The running of an acid effluent from a galvanising and paint works into a private ditch has been the subject of complaint and the report of the County Analyst was to the effect that the effluent was an exceedingly bad one. After due consideration the Council concluded that the matter in dispute was a private one over which they could exercise no control.

“The main portion of the town possesses a water-carriage system and the sewers are being extended with its growth. New sewers have been laid in the following roads :—

Overpool	... 1370 yards	... 9-inch pipe
John Street	... 57 „	... 9-inch „
Enfield Road	... 87 „	... 12-inch „

“All the sewers are flushed once a month.”

HALE URBAN DISTRICT.—“That portion of the sewage from the south side of Hale Road with a little on the north side is dealt with at the Council’s Sewage Farm, while the major portion of that from the North side of Hale Road is dealt with (by arrangement) at the Altrincham Sewage Farm. During the year the effluents have been good and have satisfied the requirements of the Mersey and Irwell Commissioners, but numerous well-founded complaints of odorous emanations from the sewage farm have been received. As you are aware, subsequent to a visit of a Local Government Board Officer, the matter was taken up by the Council and plans for reconstruction submitted to the Local Government Board. At the ensuing public enquiry the Council’s plans were opposed and as an alternative removal of the works to some point outside the district was advocated. If such alternative is practicable from an engineering standpoint I certainly am in favour of it even though it may be expensive. But be that as it may, it is imperative that there should be a liberal expenditure on the present sewage farm in order that recurring nuisance may be obviated.”

HANDFORTH URBAN DISTRICT.—“The rivers and streams are all more or less polluted by sewage and trade refuse.”

HAZEL GROVE AND BRAMHALL URBAN DISTRICT.—“A system of surface water drains is being gradually provided in the district for the purpose of relieving the main sewers. During this year such have been put in Hatherlow Lane, Davenport Road, Lever Street, Chapel Street and Kitts Moss Lane, Bramhall. The disposal of sewage is effected in the Bramhall drainage area by a bacteriological system in Tenement Lane and by a chemical

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precipitation works in Offerton, for the Hazel Grove drainage area, both of which are in good order and the samples taken during the year have been classed as 'good.' "

HOOLE URBAN DISTRICT.—"The sewers of the district empty into the Chester-system and have been regularly flushed. The new sewerage work that was commenced in October, 1912, has been completed and is reported as satisfactory by the Consulting Surveyor (with the exception of a small defect in Charles Street, which the Council are pressing the Contractor to remedy). The sewerage system throughout the district has undoubtedly been greatly improved by the above-mentioned work."

HOYLAKE AND WEST KIRBY URBAN DISTRICT.—"The engineer has kindly supplied me with the following report, which provides succinctly a description of the sewers, the difficulties met with, the methods of flushing and his recommendations for improvements."

"There is considerable difficulty in keeping the Dee Lane outfall open owing to the constant encroachment of sand. The Council will have to consider this problem in the near future. All the main sewers in the district usually run full bore and are therefore self-cleansing. To flush these with fresh water is worse than throwing money away, as it only tends to prevent the free flow of the tributary sewers without in any way assisting the main sewer. Efficiency and economy is best obtained by flushing those sewers which from lack of gradient or flow are not self-cleansing and saving water on sewers which from observation and levels are found to be self-cleansing. Certain sewers are flushed by impounding sea water and other sewers have such a poor gradient—or no gradient at all—that flushing has no effect and the only means of dealing with them is to rod them. There are still certain sewers of deposit in the Kington Road district, West Kirby, which, when flushed, only cause flooding in the adjoining yards. The diversion of the Lang Lane district sewage from across Lear's land into the new main sewer down Riversdale Road has stopped all flooding in the Grange Road, Dee Lane, and Milton Road areas. Considerable economy in the accounts for water has been achieved by putting all water used through a meter and the adoption of a system of flushing, but further saving could be effected by using sea water, which might be raised by an electric motor pump fixed at the new baths and conveyed by a motor water-cart, both for street watering and sewer flushing. The new pumping plant in Stanley Road has done away with three flushing tanks and is working economically.

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The Council flush the drains of about 50 houses at a charge of 2s. 6d. each visit to cover cost of water and labour, but naturally it would not be possible to flush the drains of all houses without increasing the rates."

MARPLE URBAN DISTRICT.—"We have considerably improved the sewerage and drainage this year and although the sewage works may be large enough at present in the near future they will have to be much enlarged and more land will be required for filtration. The length of sewer in Stockport Road, mentioned in my last report, has been relieved by the construction of another sewer. The flushing of the dead ends of sewers as at present practised will not be sufficient in a dry season and thorough flushing of the whole system will be necessary. We have joined with the Ludworth and Mellor Sewerage Board and will carry the sewage of Low Marple into their system, by this means saving the ratepayers considerable expense and enabling us to, at last, thoroughly drain that district.

"The Low Marple sewage question has received the serious consideration of your Committee, who have now arranged that Marple should become a partner with the Ludworth and Mellor Joint Sewerage Board. This arrangement will enable the Council to construct proper sewers in the Low Marple portion of the district and to connect to the Ludworth and Mellor Joint Sewerage Board's sewers at Marple Bridge."

NANTWICH URBAN DISTRICT.—"The correspondence between the Local Government Board and the Council engineers was continued early in the year. The Local Government Board finally sanctioned the loan for the purchase of the extra land ($17\frac{1}{4}$ acres) for sewage disposal works. The scheme was remodelled so as to enable the additional land to be utilised and was then approved by the Nantwich Urban District Council. Instructions were given for the plans and estimates, with the report of the engineers, to be transmitted to the Local Government Board for their approval and no doubt in due course the usual inquiry will be held to sanction the necessary loan."

NESTON AND PARKGATE URBAN DISTRICT.—"You can legitimately claim that the area is well sewered, for the Council long ago recognised this prime necessity for the healthy development of the area under their control. Old sewers have been reconstructed and new ones made in accordance with the growth of the townships. Much public money has been expended in the sewerage schemes, but the full benefit of this expenditure is far

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from realised, for properties unconnected with the sewers even along the main streets are common. There is no disposition on the part of owners voluntarily to adopt the water carriage system, although one would from ordinary reasoning have concluded that, with the abundant water supply available and payment having been exacted for the sewers, the small additional expense necessary to complete the work would have been forthcoming. Automatic and horse flushing tanks are in regular use throughout the system.

“The bacteria beds in which the sewage from Great and Little Neston is treated are in good order and do their work efficiently. A piped drain conducts the effluent from the beds to the River Dee and a sample taken at the outfall when analysed was reported as ‘fairly good’ in March, 1913. Parkgate sewage is discharged into tidal water, and the sewer is flushed periodically by means of a private swimming bath which discharges 18,000 gallons of water, obtained from an artesian well, along a six-inch pipe into it. The Council have been under an obligation to extend the outfall to a deep gutter in the River Dee, but it was found that this gutter was rapidly approaching the outfall; and when a representation to this effect was made to the Local Government Board, whose Inspector had advised the extension, permission was given to defer any work pending observations on the local conditions. Close attention is paid to the outfall and it is over four years since any complaint of nuisance arising from it has been received. The sewer is kept well flushed and the flush from the bath referred to above is discharged at ebb tide.”

NORTHWICH URBAN DISTRICT.—“The new sewerage scheme sanctioned by the Local Government Board for the lower part of the town is now complete and in full working order and giving satisfaction and the whole town is now efficiently sewered. The treatment at the outfall works is by means of bacteria beds, precipitation tanks and percolating filters. No complaints have been received as to any nuisance arising therefrom during the period under review.”

RUNCORN URBAN DISTRICT.—“All the Urban District sewers with the exception of one empty into one large intercepting sewer, that dips under the Ship Canal at No Man’s Land to the west of the town and discharges into the River Mersey. Further west there is another large sewer that drains some of the outside parts of the town and dips under the canal some distance to the west and discharges also into the River Mersey. These sewers are under constant inspection.”

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SANDBACH URBAN DISTRICT.—“The sewerage system is in very good working order and the effluent is a very good one. The system is as follows:—All the sewers of the town have been connected up with the new system. One part has a small system of its own and another that lies very low has been provided with a small pumping station of its own where the sewage is lifted by a water motor into one of the higher sewers. Storm overflows have been placed at various points. The outfall works are designed to deal with the sewage from 4,600 persons at 20 gallons per head, or 92,000 gallons per day dry weather flow. The works consist of grit tanks, septic tanks, continuous filter beds, storm beds and three acres of land for final treatment. The sewage is delivered at the works in two sewers which join in an open channel and pass by an open trough 12 feet long, arranged so as to overflow when six times the dry weather flow is passing. From here, flowing through two open channels with weirs 20 feet long, arranged to divide the sewage again, passing three times the dry weather flow to the tanks and the same quantity to the storm water bed. There are two grit tanks, each 10 feet square by six feet deep, with a capacity of 7,500 gallons and two septic tanks, each 41 feet by 20 feet by nine feet deep, with a capacity of 92,250 gallons. The grit tanks are fitted with chain pumps to remove the sludge which is pumped to a small lagoon on low ground. There are two filters, 70 feet diameter, six feet deep, with a total contents of 1,710 cubic yards, upon which the sewage is distributed by Fiddian Distributors and from here the filtrate is distributed to the three acres of land by an open carrier. The filters are filled with tap clinkers, broken up to varying gauge from two inches at the bottom to half an inch at top. The land has been drained to an average depth of four feet. The storm water bed consists of 670 cubic yards of broken clinkers, the water being distributed by half pipe channels. A few houses in the outlying districts are supplied with cesspools of a suitable character and are emptied and cleaned out as required.”

TARPORLEY URBAN DISTRICT.—“There has been a large extension of the sewer in Tarporley during 1913. About 450 yards of six inch sewer has been laid from Manor House Farm to Birch Heath Road, collecting the drainage from several houses on the west side of High Street which could not be drained into the main sewer. Some parts of the villages are still without a proper system of sewers, having tanks and cesspools which they empty on to their gardens and land. Nearly all the cottages in Tarporley have been provided with w.c.'s. The Tarporley sewage is disposed of by means of a precipitation tank, sludge beds and land treatment. These sewage works are in good condition. There have

been no complaints as to the disposal works, except an overflow of water on to low adjoining land and no alterations have taken place at the disposal works during 1913."

WILMSLOW URBAN DISTRICT.—"The sewage is treated by (a) precipitation tanks and land, (b) broad irrigation. No complaints were made during the year. A few parts of the rural area (Morley and the Hough) are without a proper sewerage system. No new works were carried out during the year."

WINCFORD URBAN DISTRICT.—"A new sewer has been laid in Station Road, but the houses are not yet connected. When this is done, the two old sewers, which run through private land behind the houses, one serving each side of the road and which are of defective construction, will be cut off and disused. There is no other new feature under this head."

YEARDSLEY-CUM-WHALEY URBAN DISTRICT.—"I understand that the work of laying the sewerage pipes in your district is practically completed. I note that the wise suggestion of your late Medical Officer, Dr. Welch, with regard to the extension of the sewer to Stoneheads and the distant end of Hoekerley Lane, has not been carried out. I am of the opinion that in the near future this extension will have to be undertaken."

BUCKLOW RURAL DISTRICT COUNCIL.—"The Special Committee, appointed a few years ago, to deal with certain particular difficulties, has gradually come to be a Standing Committee of the Council, with charge over an increasing number of works and schemes.

"*Timperley*..—These sewers and the outfall at Dark Lane, form the oldest works in the district. They cannot be considered satisfactory; but by unremitting care and attention, just manage to escape condemnation. One complaint was received from the Mersey and Irwell Committee of a bad effluent, and the faults found on examination were remedied as far as possible.

"*Northenden*..—This is the next oldest. Growth of population has rendered it inadequate; and plans for enlargement and reconstruction have been sent to the L.G.B., and a local enquiry will follow in due course.

"*Dunham Massey*..—Disposal is by broad irrigation. So far the land is equal to the demand upon it, and the effluent is good.

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"*Baguley*.—The scheme described a year ago is completed and plans have been sent to the L.G.B., whose local enquiry is awaited.

"*Peover Superior*.—Much attention has been given to the admitted needs of the two hamlets of Parkgate and Peover Heath. Up to the time of writing no scheme has been adopted, though the difficulties are rather financial than engineering.

"*Styal*.—This is another of the 'border line' cases, where some length of sewer, with proper outfall, is very desirable. Exactly how much may be arguable. As there is now a station here on the new loop line of the L. & N.-W. Ry. Co., it seems probable that new houses will follow some day and the need will become more urgent. A scheme has been prepared and is in existence, but the cost was so heavy that its consideration is adjourned indefinitely.

"The existing drains in the old village were laid a long time ago by the land-owner and run into the river Bollin.

"*Northern Etchells*.—Sewers are urgently needed in this Township, first for Stonepail, which touches the border of the Cheadle and Gatley U.D. and second for Moss Nook, Hey Head and Heald Green. At the last named there is another new station and building would go forward if there were sewers. This problem however presents other difficulties besides those of engineering and expense (serious though these are), and I have advised the Committee to lay the whole matter before the L.G.B. for advice. Under these circumstances it is not desirable to say more here.

"*Partington*.—The general question remains *in statu quo*. A blocked ditch has been cleared; which was no easy matter, as the block occurred in earthenware pipes buried beneath a large spoil-heap created by the excavation of the Ship Canal.

"*Mobberley*.—Parts of this township would be greatly improved by having sewers. A scheme is gradually being evolved, under the usual difficulties of area to be served, engineering and finance and will I hope be ready for consideration during 1914.

"The remainder of the district does not call for special mention."

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CHESTER RURAL DISTRICT.—“The following new works of sewerage have been carried out during 1913 :—Storm overflow at the Bache has been improved. Bache, Upton, Newton, Christleton and Great Boughton sewers have required attention, the lift and flushing tanks being repaired. Newton—Back passage sewer repaired. Hoole Village—A new length of sewer has been made from two houses to join the Hoole sewer. Improvement of farm sewage disposal at Thornton.

“Great Saughall you have still before you, but it is very likely this will be carried through this next year. Mickle Trafford is still without a satisfactory system of sewerage and has been before you for further consideration. This most probably will be improved during 1914. The City of Chester sewers dispose of the sewage from Christleton, Great Boughton, Newton, Upton and the Bache. Eccleston, Pulford, Poulton and part of Dodleston, are treated by the Eaton Estate. A filter bed at Balderton treats a good portion of the Dodleston sewerage, as well as Balderton. A similar filter bed has been provided for Poulton. There have been no complaints during 1913 as to the disposal works in your district.”

CONGLETON RURAL DISTRICT.—“Mow Bank and Thurlwood have no system of sewerage; both of these places have been reported before. At Elworth the outfall works that have been completed this year will be a great improvement. The irrigation grounds I have inspected and found them all working very satisfactorily, except that at Mount Pleasant, which requires better attention and more land.”

DISLEY RURAL DISTRICT.—“For the greater part of Disley this is satisfactory. The sewer for the Furness Vale portion of the district is nearly completed and will discharge to the outfall works of the Whaley and District Joint Board. The plans for a scheme of sewerage for Newtown are at present before the Local Government Board.”

MACCLESFIELD RURAL DISTRICT.—“The scheme dealing with sewerage and the treatment of the sewage of Chelford has been carried out during the year and the joint sewer for houses on the Alderley Edge boundary has also been completed. The sewerage of Taxal is at present being dealt with. At Nether Alderley a sewer was laid conjointly with the Alderley Edge Urban District Council to meet the requirements of houses, some of which are in the Urban District and others in the Rural District. The sewage from those in the Rural District is treated by the Urban District

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Council under agreement. At Chelford 1,469 yards of new sewers were laid and provision was made for treating the sewage conveyed by them. The houses to which the sewers are available are now being re-drained to the new sewers. At Taxal, one of the constituents of the Whaley Bridge Joint Sewerage District, a start was made with the construction of sewers and by the end of the year 450 yards of those required had been laid. The Woodford sewers were extended 492 yards to meet the requirements of houses about to be built in Bramhall Road. Fourteen additional houses were drained into sewers which discharge by agreement into the outfall sewers of the Macclesfield Corporation.

“There are now so discharging into these sewers:—

In Butley	...	...	50 houses
„ Prestbury	...	...	55 „
„ Tytherington	...	...	27 „
„ Upton	...	...	19 „ ”

MALPAS RURAL DISTRICT.--“No new works of sewerage have been carried out during 1913. The sewage for Malpas Town is disposed of by bacteriological treatment. There are three outfalls, one at Wells Lane, one at Whitechurch Road and one at Wrexham Road, each consisting of a sedimentation tank which empties on to three lots of filter beds, arranged in two tiers. No alterations or extensions have taken place in the disposal works during 1913, except the addition of spraying troughs at the Whitechurch Road beds. None of the district, except Malpas Town, has any system of sewers. In the small villages most of the houses have separate cesspools. Isolated cottages run their sewage into cesspools or into the nearest water-course. Most of the farms deposit their sewage on the land.”

NANTWICH RURAL DISTRICT.—“A great improvement has been effected by the laying of a new sewer for London Road, Willaston. This sewer is connected with the Urban District Council's sewers. A large number of drainage nuisances have been removed as a result of its construction. The work of sewer-ing the village of Willaston has been delayed by the failure of the contractor; but work has now been recommenced and I hope will now go on to completion. The plans for the sewer-ing of Haslington have now been approved by the Local Government Board, but work has not yet commenced. The village of Shavington is full of drainage nuisances and merits the early attention of the Council. The condition of Broad Lane, Stapeley, is bad and, owing to the fact that the Local Government Board would not agree to the

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Rural District Council's connecting up with the sewers of the Nantwich Urban District until sewerage outfall works had been constructed by the Urban District Council. The work of sewerage this part of the district seems to be indefinitely postponed. I think that the Board might well have allowed the work to proceed, as the additional pollution of the river would have been scarcely perceptible. The township of Bunbury needs attention. There are numerous water-closets in this village and the brook is considerably polluted by sewage from these.

"New works of sewerage were carried out during 1913 at London Road, Willaston.

"The following parts of your district are still without a proper system of sewers :—Willaston, Wistaston, Audlem (part of), Shavington, Bunbury and Haslington."

The Surveyor reports :—"The carrying out of Willaston and Wistaston sewerage has been in progress during the year, but unfortunately the contractor who first commenced the works was unable to continue them and fresh tenders had to be obtained for their completion. This was done and the tender of another contractor accepted and the work is now being pushed forward, though considerable delay has been caused by the default of the first contractor to carry out his contract. The Local Government Board's sanction has also been received to the Haslington sewerage scheme and specifications and quantities have been prepared and tenders will shortly be obtained. The sewerage of London Road, Willaston, has been carried out during the year and the houses on both sides of the road have been connected up to the sewer. The ditches in Warmingham Road, Coppenhall, which were so very offensive owing to the sewage from a number of cottages being discharged into them have ceased to be offensive since the cottages in question have been redrained and the drains made to discharge into covered cesspools."

NORTHWICH RURAL DISTRICT.—The Surveyor reports :—" *Barnton*.—The sewage disposal works continue to yield very good effluents. The low level sewer has caused some trouble owing to large accumulations of sand and grit washing in from the high lands. It has been opened out in sections and is now in good order.

"The Council have had under consideration my report on the inefficient ventilation of sewers of the district, where three coal gas sewer ventilating lamps are in use. The system in operation

SEWERAGE AND SEWAGE DISPOSAL.

is to light the ventilating lamps as and when the street lamps are lighted. This means that during moonlight nights the lamps are not lighted at all and what is worse still, when the lighting season finishes, the ventilating lamps are not used again until the winter lighting season commences. Estimates were obtained for (1) lighting from sunrise to sunset each day throughout the year and (2) for lighting continuously throughout the year the full 24 hours each day. The costs were as follows:—(1) £8 5s. 0d. each or a total of £24 15s. 0d. per annum. (2) £12 10s. 0d. each or a total of £37 10s. 0d. per annum. Each lamp is of the single burner type. The present cost to the Council is £2 17s. per lamp, or a total of £8 11s. per annum. This greatly increased cost was considered too much for the township and it was therefore decided to remove the lamps and in lieu thereof to substitute steel tube ventilating shafts of suitable dimensions fixed at the highest points of the system of sewers. Any other sewers requiring ventilation to be dealt with in this manner.

“Hartford.—The schemes for remodelling the outfall works and laying new sewer to abolish the existing outfall at Hartford Beach have been approved by the Council. The scheme for carrying the main sewer over the line at Hartford Station so as to abolish the existing outfall tank on the Heywood side of the railway has required some modification owing to provision having to be made for future widening of the L. & N.-W. main line. The revised drawings have been prepared and the railway authorities appear to be at last moving more quickly in the matter, which has taken about twelve months in the way of negotiation. However it is anticipated that the Council will soon be able to apply to the Local Government Board for their sanction to a loan to cover the three branches of the Hartford sewage scheme.

“Winnington.—The 15-in. diameter main sewer across Winnington Park has owing to the development of works in the locality been diverted at the expense of the owners of the works, Messrs. Brunner, Mond & Co., Ltd. The joint outfall works at Wallerscote have been remodelled and since this work has been carried out the Council's 15-in. outfall sewer constantly remains partially flooded, generally about two-thirds full. A sample of the effluent taken on December 30th from these works was reported on by the County Analyst as ‘a bad effluent, with practically no signs of having undergone necessary oxidation.’ A copy of the report was forwarded to the Urban Council and is no doubt under consideration.

“Acton.—The sewer at the north end of the district has been extended a distance of 52 lin. yards.

SEWERAGE AND SEWAGE DISPOSAL.

“*Weaverham (Sandiway).*—In connection with twelve houses, the sewage from which was dealt with in two small tanks connected to a ditch by an overflow, the Council have constructed a septic tank and soak-away filter. The effluent therefore now passes into a sand bed of great depth and causes no nuisance. This is a great improvement on the previous system. The owner of the property contributed one-half the cost.

“*Wincham.*—The percolating filter at the outfall has been taken down, the media washed and the filter rebuilt. The improved results have amply repaid for the expense incurred.

“*Rudheath.*—In connection with the outfall works, a new 12-inch diameter effluent sewer has been laid through the railway cattle arch to the River Dane, a distance of 290 lin. yards, in substitution for the existing 9 inch sewer, which delivered into the culvert passing under the railway. A sample of the effluent from these works taken in May last, was reported on by the County Analyst as ‘a fairly good effluent.’

RUNCORN RURAL DISTRICT.—“Sewerage schemes have been laid down in the following portions of your district, viz. :—

1. Helsby, with sewage disposal works ; outfall to river.
2. Frodsham and Frodsham Lordship ; outfall to river.
3. Stockton Heath ; outfall to river.
4. Walton Inferior and Superior ; outfall to river.
5. Daresbury ; with small sewage disposal works ; outfall reaches river
6. Halton ; outfall to river.
7. Weston and Weston Point ; outfall to river.
8. Moore, with sewage disposal works ; outfall to river.
9. For Grappenhall, Thelwall and Latchford Without, a combined scheme is at present in course of negotiation and arrangement.

“It does not appear necessary to undertake further sewerage works in your district just at present.”

TARVIN RURAL DISTRICT.—“There has only been one new works of sewerage carried out in your district during 1913 and that is a private scheme constructed at Willington to deal with the sewage from Tirley Garth ; this works satisfactorily. Farndon, Tattenhall and Churton are still without a proper system of sewerage and are still before you for consideration. The sewage is disposed of in most cases into the nearest water-course

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in a crude state. In some few cases it is filtered before entering the stream ; in other cases it is deposited on the land. There have been no complaints during 1913 as to the disposal of sewage except from the Chester Waterworks Company and Dee Conservancy Board. No alterations or extensions have taken place in disposal works during 1913 except the above."

TINTWISTLE RURAL DISTRICT.—"The new sewage works at Tintwistle were opened in August. The sewage is treated on the latest principle by detritus tanks, septic tanks (open), bacteria beds with revolving arm and humus tanks. New intercepting sewers were laid to the present sewers. Approximate total cost of works, £2,400. A sample of sewage was taken by the Inspector for the Mersey and Irwell Joint Committee. This was reported as a good effluent. The disposal of excreta is chiefly with ashpit refuse. These are emptied by the owners of the property at frequent intervals and on the whole satisfactory.

"Complaints have been made by the Inspector for the Mersey and Irwell Joint Committee of the pollution of a stream running from Matley to Stalybridge. This is owing to the inadequacy of the sewage works in that portion of your district. Plans for new sewage works were got out by your Inspector, but it is hoped that an arrangement with Stalybridge and Dukinfield Corporations will be made in order that the sewage may be treated with theirs."

The Inspector reports :—"The new sewage disposal works for Tintwistle have been working since August and so far have proved satisfactory. There are one or two minor details yet to be done and when these are completed you will have one of the best of their kind in the country. The amount of sludge produced is very large for the size of the place. The method of treatment is by detritus tanks, open septic tanks and bacteria beds and humus tanks, the sewage being distributed by revolving arms. Only one sample has yet been taken by the Mersey and Irwell Joint Committee. This was reported as a good effluent. During the year the whole of the filter bed at Matley was renewed with clinkers. Several small lengths of sewers in the district have been repaired or relaid and all are now working satisfactorily."

WIRRAL RURAL DISTRICT.—"Sewage from the villages of Prenton, Noetorum, Upton, Bidston and Moreton passes through the Fender Valley outfall sewer. Sewage from Willaston, Gayton, Childer Thornton, Hooton and part of Eastham is treated in septic tanks and bacteria beds. Heswall, part of Eastham, Great Sutton, Little Sutton, Caldy, Poulton through Lower Bebington sewers

and Grange through Hoylake sewers, discharge sewage directly into tidal waters.

“Thornton Hough.—At the date of last year’s report the scheme for the sewerage of this township was on the point of completion. A sample of effluent taken on 16th October was certified as ‘very good,’ shewing that the disposal works were acting satisfactorily.

“The Caddy Sewerage Works are almost completed and provide for a population of about 700. There is a storage tank which is emptied automatically on the ebb tide and has a capacity equal to twice the average dry weather flow on the population now provided for.

“The Eastham Sewerage Works have been used for the treatment of a greater quantity of sewage than they were intended to deal with when first constructed, owing to the rapid increase in the population of the villages concerned. The result has been that the effluents were unsatisfactory.

“Numerous discussions have taken place in the Council concerning how these beds are to be adapted for disposal of the sewage of the enlarged townships which they have to take. Arising out of these debates, delegates from the Council, accompanied by the Engineer, visited the sites of several modern works with a view to selecting the process which was carried on most efficiently and with least local nuisance. The view expressed on their return was that all the sewerage works visited had obnoxious odours in varying degree and that for the future sites would be selected away from public roads. The Engineer is at present engaged on the preparation of scheme for altering the works in a radical fashion.

“Samples of effluent from an Institution with about 150 persons have been analysed and found exceedingly bad, ‘in effect a raw dilute sewage.’ The makers of the apparatus have been communicated with and steps are being taken actively to make the beds efficient.”

Section X.—Rivers Pollution.

I have given as much attention to the inspection of rivers, streams, sewage disposal works, etc., as the numerous other calls on my time have permitted, but I am of opinion that this work can only be adequately carried out by the appointment of an inspector to assist in this and other work. Occasional visits, often at intervals of about three months, is not enough to ensure the maintenance of a sufficiently high standard at purification works. The thorough and systematic search of a stream for sources of pollution is work which consumes an enormous amount of time.

The Eighth Report of the Royal Commission on Sewage Disposal takes a common-sense view of the matter of purification, in effect stating that we must be guided, in forming an opinion on an effluent, not merely by the amount of impurity analysis shews it to contain, but by the effect of the effluent on the stream into which it is discharged. That is to say the object to aim at is the prevention of "nuisance," a term used by the Commissioners without definition. This means the setting up of a standard for each particular case if one is to interpret it literally. But the Royal Commission apparently mean that a general standard applicable to most cases should be set up and that Authorities controlling the pollution of rivers should have power to fix standards either higher or lower than the normal for exceptional cases.

Difficulties will arise in connection with the effluents of many manufacturing concerns where processes, say of dyeing, vary from time to time, but these should not prove serious. It is to be regretted that a possible loophole for negligent Local Authorities has been left owing to the decision of the Commissioners that in some cases no treatment beyond mere screening will be required. This is a retrograde step and if acted upon will mar some of our more beautiful rivers unless the riparian owners come to the rescue and their task in any court of law will be seriously prejudiced by this pronouncement of the Royal Commission.

There is no doubt that a good deal of public money has been wasted in the production of effluents of a higher class than has really been necessary, having regard to the stream into which they were turned. With a standard graduated to the necessities of the case and a level headed river authority to determine what is necessary in exceptional cases, much of the existing irritation felt by those who have to carry on industries and at the same time purify their trade waste should disappear. The condition of the river is, after

all, the main thing to be looked at rather than the condition of the effluent and it is my opinion that the enforcement of the Royal Commission's recommendation will result in quite as much levelling up as levelling down.

The great difficulty I see about this recommendation is that connected with the gauging of the flow of rivers and streams. No matter by whom this is to be carried out it will involve serious expense for it will have to be extended over a fairly considerable period until the various peculiarities of each river are thoroughly understood. There will also be difficulties about the collection of samples and possibly also in the carrying out of the dissolved oxygen test, but these are minor ones compared with the gauging of the flow of the water in the rivers. Some preliminary investigations will be undertaken on these points as early as possible, so that we may be to some extent prepared for the new duties when they are imposed on us.

Your Rivers Pollution Committee has been persistent in its endeavours to secure greater purity of the rivers under its jurisdiction. But, in many cases, work has been handicapped seriously by the limitations of the Rivers Pollution Acts. The principal offenders and those most difficult to deal with satisfactorily are those who pollute the waters of the Englesea and Valley brooks (tributaries of the River Weaver), the River Wheelock and the River Dane. To a slightly less extent the pollution of the River Dee requires action, though this is caused not so much by default in Cheshire as by serious default or indifference on the part of Denbighshire. Where the water supply of a large community is concerned, this question assumes a most serious aspect.

Much, however, has been done by the exercise of tact and patience, but the time has undoubtedly come for much more drastic action and I do not anticipate any hesitation on the part of your Council when this matter has to be finally faced.

I append a few extracts from the Annual Reports of the Medical Officers of Health; many of these officers do not concern themselves with the matter, as it is largely outside their jurisdiction. *It would very much assist me in my work if they would keep me regularly acquainted with any sources of pollution arising in their respective districts.*

CREWE MUNICIPAL BOROUGH.—“The Valley and North brooks flow through the borough. The Valley brook is polluted from various sources before it enters the town and some pollution

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takes place in its course therein. The outfall sewers of Crewe are connected with adjacent streams by storm over-flows which come into operation only on six times the dry weather flow."

DUKINFIELD MUNICIPAL BOROUGH.—"The River Tame separates the two towns of Dukinfield and Ashton-under-Lyne. No pollution enters the river directly from works or otherwise in the town, as the sewage is first of all treated at Bradley Hurst Farm and filtered before being discharged into the river. The condition of the River Tame is, therefore, considerably better as regards pollution, owing to the time and money spent upon the purification of sewage by the various localities on its bank, as no sewage now enters the river from any of these districts unless previously treated."

ASHTON-UPON-MERSEY URBAN DISTRICT.—"The River Mersey has been fairly full of water this year, so that from it there has been very little smell; the same may be said of the few brooks there are in Ashton-upon-Mersey. There have been several complaints of bad smells from the north-east district. This has been the subject of enquiry by the Local Government Board."

LOWER BEBINGTON URBAN DISTRICT.—"Several streams pass through the district the waters of which have previously received sewage from houses and effluents from sewage purification works in the neighbouring areas."

BOLLINGTON URBAN DISTRICT.—"As mentioned in last year's report, the 'flume' has been purchased and since April last has been discontinued as a water course. This is indeed a great step forward. For years the 'flume' has been a nuisance in summer weather. Running as it did close to the main road for the greater part of its course, it called everyone's attention to it and in no uncertain manner. Its discontinuance is one of the most satisfactory things accomplished by the Council, from a sanitary point of view, for some years past. With regard to the main stream itself, there is no doubt that at times effluent or other waste matter from the works on its banks finds its way into it either insufficiently or entirely untreated. On such occasions those who have the misfortune to live close to it have undoubted cause for complaint. Seeing that the Council has put its own house in order by the establishment of a satisfactory drainage system and thus putting an end to the flow of sewage into the stream, it is hoped that the Works Authorities, who use it as a means of disposal of their effluent, will do their share in the matter also, by treating this in as thorough a manner as possible

before allowing it to flow into the stream. It should be here stated that the Urban District Council is not the authority responsible for the guarding against pollution of the stream. This matter lies with the Mersey and Irwell Joint Committee and all complaints as to pollution should be sent to the Inspector of this Committee.

“In the autumn of the past year, complaints of the foul smells emanating from the stream having come to the notice of your Nuisance Inspector, a visit was paid by him in the company of your Medical Officer to the Brewery. Here it was found that the system for treating the effluent—washings from beer barrels, &c., was completely broken down and evidently had been out of action for some considerable time. The result of this was that the more fluid effluent had found its way more or less directly into the stream, whilst the more solid matter was seen to have been tipped on to the brook side. The attention of the owner was called to this matter. He explained that the old pump became very easily blocked and that a new one had been ordered. The Mersey and Irwell Committee were also notified. At the same time, higher up the course of the stream, leakage was found to be taking place from the outlet to the tanks connected with the system adopted by the Bleachworks for treating their effluent. Here a valve was found to be at fault. The owners were notified and the valve put in order. The combination of sour starchy matter from these works and washings from beer barrels lower down would seem to be an ideal one to give rise to a serious nuisance. Occasional breakdowns may not be altogether unavoidable. It is expected, however, that the works people will see to the trouble at once and have the defects remedied as quickly as possible. Whilst a large addition has recently been made to the Paper Staining Works implying, one would suppose, increased output with corresponding increase in waste matter, no further facilities for treating this have, up to the present, been installed.

“The main sewers and outfall works have worked very satisfactorily during the year. With the exception of certain portions which have hitherto been found too inaccessible or too isolated the whole district is sewered.”

BROMBOROUGH URBAN DISTRICT.—“Several small streams which have traversed the greater part of Wirral pass into the district to fall into the Mersey at Bromborough Pool. These streams are polluted by house drainage and by effluents from sewage works at various points in their course.”

COMPSTALL URBAN DISTRICT.—“The River Etherow divides the district from the Glossop Rural District, and on work-days is

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dirty, owing to effluents from works higher up the river. The sewage consists of slopwater, and is conveyed by the sewers to a reserve, which collects river and spring water for the Turbine at the Mills. Thence it flows into the river. The outlets into the reserve are constantly cleaned, so that the sewage cannot deposit and the effluvia arising from the reserve has been practically nil. I understand that the Council are considering the question of a sewerage scheme for the urban portion of the district."

NESTON AND PARKGATE URBAN DISTRICT.—"There are no polluted rivers or streams, but ditches in an unsatisfactory condition continue to receive attention. A watercourse at the back of a group of cottages with an extent of 53 yards has had to be cleaned out from time to time owing to the periodic recurrence of a nuisance from deposits of filth. The Council have now resolved to pipe or culvert it and this work will be allowed for in the next estimates. Six large residences have been erected during the last few years along a lane at a considerable distance from the public sewer, but each house drains to a private sewage disposal apparatus of the septic tank and filter type. A sample of water from a ditch into which the effluents are conducted was submitted for analysis, and reported as showing evidence of recent and extensive sewage pollution. This matter is receiving further attention as the ultimate destination of the effluents is to a pond serving as a water supply for cattle."

SANDBACH URBAN DISTRICT.—"The only matter that gets into our brooks comes from further up the rivers and in my opinion what pollution there is, is not injurious to the public health."

TARPORLEY URBAN DISTRICT.—"The streams are fairly free from pollution, with the exception of the brooks in the townships of Eaton and Utkinton, which are polluted by house drainage and farm sewage. There is no manufacturing waste or effluents entering them."

BUCKLOW RURAL DISTRICT.—"Sinderland brook is much obstructed (by fallen trunks, &c.) and it is very desirable that it should be cleared. It is difficult to say whose duty this is; but probably negotiations might provide joint action by this Council (which is willing), the Altrincham Urban District Council and the riparian owners. Mr. Metcalfe says:—

"Many inspections have been made of the rivers in the district and several samples of the waters taken, although it was not considered necessary to submit them for analysis. There appeared to be less discoloration of the Bollin during the year than has been the case in recent years."

CHESTER RURAL DISTRICT.—“In the Chester Rural District some of the streams are polluted or are likely to be polluted. At Great Saughall the stream is polluted by the house drainage of the whole village. A second sewage scheme has been prepared and waits a Local Government Board enquiry. House drainage pollutes the River Gowy at Mickle Trafford and some cottages pollute the brook at Abbots Meads. No manufacturing waste or effluents cause pollution.”

DISLEY RURAL DISTRICT.—“The rivers and streams are polluted by trade effluents, but such pollution is reduced to a minimum by the supervision of the Mersey and Irwell Joint Committee and by the Rivers Inspector of the Cheshire County Council. The undrained houses in the Newtown and Furness Vale portions of the district are also a possible source of pollution.”

MALPAS RURAL DISTRICT.—“In the Malpas Rural District there seems to be little pollution of the streams except from house and farm drainage. The farm drainage and sewage is nearly all dealt with on the land. No manufacturing waste or effluents cause pollution.”

NANTWICH RURAL DISTRICT.—“The River Weaver still receives the whole of the crude sewage of Nantwich. The amount of crude sewage from Crewe is much less than formerly. The streams entering the district from Staffordshire have not been so badly polluted as used to be the case.

In my opinion the following rivers or streams in the district are polluted, or likely to be polluted at times as under :—

Source of Pollution.	River or stream concerned.
Public Sewage Disposal Works.....	River Weaver.
Private Sewage Disposal Works.....	Spurstow and Bunbury Brooks.
Solid matter (accumulations of cinders, refuse, sludge, etc.).....	Checkley Brook. (Slack Washing).
House Drainage.....	Most of the streams in the district to some extent.
Manufacturing waste or effluents	Barthomley Brook at times.

TARVIN RURAL DISTRICT.—“In the Tarvin Rural District all the tributary streams of the Gowy are more or less polluted by farm sewage, which should be dealt with on the land. Public sewage disposal works are likely to pollute the Dee and Aldford brook. Private sewage disposal works are likely to pollute the

RIVERS POLLUTION—REFUSE REMOVAL AND DISPOSAL.

brook at Tattenhall and the Dee at Farndon. Solid matters, accumulation of cinders, refuse, sludge, etc.—The River Dee at Farndon, the brook at Tattenhall, Tilston brook. House drainage—The River Dee at Farndon, Tilston brook, Churton Heath, Tattenhall, Milton brook at Barrow, Clotton brook from farm and house sewage at Clotton, Guilden Sutton from house drainage. Manufacturing waste or effluents.—The Bone and Ghee Works, Tattenhall Road, pollute the Gowy; the Creamery, Tattenhall; and a cheese factory at Churton Heath.”

WIRRAL RURAL DISTRICT —“There are certain streams running through your district which are polluted by house drainage. The stream which runs from Heswall to Raby Mere through the hamlet of Brimstage also receives the effluents from Clatterbridge Workhouse filter beds and the fever hospital sewage purification apparatus. The stream which runs through Thornton Hough and Raby Vale into Raby mere was fouled by sewage, but is much cleaner since Thornton Hough Sewerage Works were completed. Residences which are distant from sewers and drained into cesspools not infrequently are found to have connected unauthorised overflow pipes to ditches and in this way the ditches soon became insanitary. The keeping of ditches clean is one of the greatest problems with which the sanitary authority has to contend. A constant struggle is maintained in relation to the question of liability to cleanse the water courses and ditches and in some instances there is no question but that technically they must be regarded as unimpeded sewers.”

Section XI—Refuse Removal and Disposal.

This is one of the matters in which sanitary authorities do not progress so quickly as in most other things affecting the public health. The large numbers of privy-middens still in existence in thickly populated areas form a standing disgrace to public health administration. Until these are abolished no really effective blow can be struck at infantile mortality, typhoid fever and other filth-borne diseases. The figures contained in the comparatively few extracts from Health Reports that I present herewith shews the extent to which these gross abominations are still in existence in large towns and Urban Districts. Much more wholesale action is needed if any improvement in public health is to be attained—action for instance which has been so commendably taken by the Runcorn Urban and Rural District Councils where loans have been obtained for the conversion of privy-middens to water-closets and the work of conversion carried out in a thorough and comprehensive manner.

REFUSE REMOVAL AND DISPOSAL.

Mr. J. Wilding, Surveyor for the Urban District of Runcorn, has very kindly furnished me with a full account of the excellent work in this direction carried out by his Council under his energetic supervision and I have pleasure in reproducing this for the encouragement and information of other Councils. I trust there will be many Councils ready to follow this excellent example.

Town Hall,

Runcorn,

24th June, 1914.

Dear Dr. Young,

The following particulars will, I think, place very clearly before you the procedure we adopted in connection with the conversion of privies into water-closets. You will see that on Nov. 28th, 1911, I reported, and in that report after giving particulars of the number of closets to be dealt with I recommended that the Council should select from a series of samples which had been supplied, a closet basin, cistern, flush pipe, &c., of a satisfactory type. This they did, selecting one of sound construction and a very reasonable price. It was also their wish that the work should be carried out in the most economical fashion and to secure this it was decided to advertise for the first thousand. The result of the experiment has been entirely satisfactory. The price that we received and that was accepted being a very reasonable one and the actual carrying out of the work has borne out the thoroughness of the specification tender form.

One of the greatest difficulties I experienced was the great variety that we had to deal with in the way of measurement, and when I tell you that every job was a measured job you will understand that the work has been very considerable. The Inquiry that was held proved to be satisfactory to our scheme and as you will see sanction was readily given for the money to be borrowed.

A further satisfactory phase of the whole thing is that when we applied for sanction for the second loan to complete the 1,600 the Local Government Board were good enough after receiving the particulars from me to grant the loan without a further Inquiry. If you desire to have a page of the pocket book you are quite welcome to it and the specification form which I enclose herewith will be found, I think, to meet the most complex cases likely to arise. Throughout the whole of the work we have experienced a desire on the part of many of the larger property owners to further improve their properties and in some cases they have spent some considerable sums on reconstruction, all of these reconstructions tending to better the sanitary conditions of the town.

Yours faithfully,

JAMES WILDING.

RUNCORN URBAN DISTRICT COUNCIL.

COPY OF FORM OF

SPECIFICATION AND TENDER

for the Conversion of Privies and Ashpits into W.C.'s.
and Ashplaces.

No Tender will be considered unless on this Form, which must be returned complete, and endorsed "Tenders for W.C.'s. (water carriage)." and addressed to

REFUSE REMOVAL AND DISPOSAL.

THE CHAIRMAN OF THE HEALTH COMMITTEE,
c/o Mr. E. MARSHALL,
Secretary, Town Hall,
Runcorn.

not later than 9 a.m., December 14th, 1912.

It is proposed to deal with from about 1,000 to 1,600 closets in a period of two years.

The Council do not bind themselves to accept the lowest or any Tender.

To the Runcorn Urban District Council.

GENTLEMEN,

I (or we) hereby offer tender and agree to carry out the work as set forth in the following Specification of the work required in the conversion of Privies and Ashpits into Water Closets and Ash Places, and in accordance with the plans and directions of your Surveyor.

1st.—To so arrange each block that temporary accommodation of say one privy for each four houses be provided until w.c.'s. are ready.

CLAUSE 1.

Take out and cart away the foul earth under old ashpits and privies.

Deodorize with Chloride of Lime and fill up with clean hard materials, in level courses not exceeding 6in. thickness, well ram and consolidate the same.

The floor of the ash-place to be 3in. above the adjoining yard level when finished, and to be laid with 2½in. seasoned Premier Artificial Flags bedded on and grouted with mortar. Floor to be laid with a fall toward the front of 1½in.

The Contractor to do all necessary shoring and supporting, and to be responsible for the safety of the adjoining building.

Remove all contaminated bricks, and make good in privies with good hard local bricks, in good ground mortar, gauged one part hydraulic lime 2½in. parts clean rock, ½ part clean cinders, wedge well up and pin with slate, and make good the wall at the back of the basins.

Cut down openings into ash-place from yard, and make good the angles of the buildings, using where needed a 4½in. by 3in. spruce lintol: continue the present party wall across the ashpit space to the height of the adjoining wall, and tie into 9in. wall (to be taken as 6ft. high by 3ft. 9in. long by 4½in. thick, with one brick footing for the purpose of this tender). Take out the present ashpit frame and door, and make good the opening (to be taken as 2ft. 6in. by 2ft. 6in. by 9in., for the purpose of this tender), with 9in. brickwork. (Any excess or deduction will be added or taken off in accordance with the Schedule following).

All brickwork to be well flushed up, full pointed, and rubbed with hard rubber. One ashpit and two privies are to be under-

stood as being one pair, and which ^{we}—undertake to do for the
I

sum of

CLAUSE 2.

Test with smoke, and examine present drain from its junction with the passage sewer. If the old drain is approved by the Surveyor and stands the tests, the following work is to be carried out in connection therewith.

REFUSE REMOVAL AND DISPOSAL.

Provide and make 6in. or 4in. connection to sewer in passage with caps or junction and provide and insert one 4in. intercepter with 4in. vertical cleansing shaft brought up to the surface and covered with 9in. by 9in. by 1½in. tile and one oblique vent arm carried into wall and finished with a mica flap inlet as per sample at Town Hall all as shewn on drawing.

Provide and fix new 4in. drain with all bends and oblique junctions from the syphon to make connection with the water closet basin and with rest bend under closet basin.

Provide and fix new connection for rust pocket and 4in. connection to same, and the said rust pocket (as per sample to be seen at Town Hall).

All connections to be well and properly made. No broken flanges will be allowed.

The joints of all drains are to be made with Portland cement (from Nelson, Greaves, or Saxon, and equal at least in quality to the standard of the British Portland Cement Users' Association) and clean sharp sand gauged one to one and all cement to be carefully cleaned out of the inside of the pipes by means of a badger drawn through each drain as the work proceeds. Proper connections to be made to passage drain with a cap or junction as directed.

The drains will all be required to stand the water test after the intercepter and new lengths are put in. All the other new drains will also be required to stand the water test. In addition to the connection to the sewer and the drain to the water closet basin, eight yards of drain 3ft. 6in., average depth are to be taken for the purpose of this tender—(any excess or deduction will be added or taken off in accordance with the Schedule following).

Provide and fix 21ft. of 4in. deep socketed ventilation pipe 3-16in. thick coated with Dr. Angus Smith solution and jointed with spun yarn 1½in. deep and finished with 1½in. well caulked lead wool, or run with molten lead, well caulked, with off-set in addition and wire cowl finish—all well secured and fastened to wall and made good to rust pocket and to stand the smoke test, (any deduction or addition will be made at the rates set forth in the Schedule following).

Make good the yard surface with the old materials—(if approved by the Surveyor) and if anything further is needed make out with similar materials.

All the foregoing work for the sum of

If the old drains do not stand the test $\frac{\text{my}}{\text{our}}$ price for taking them out and replacing with new 4in. drain all as per foregoing description is per yard lineal.

CLAUSE 3.

Cut out for and insert and make good to, and provide red pine ventilating Louvre made out of 4½in. by 1in. stuff, tongued and grooved together, overall size 2ft. 5in. by 1ft. 3in. with ¾in. Louvres inclined at 45 degrees with 2in. spaces as per detail and primed, for the sum of

CLAUSE 4.

Provide and fix in each w.e. one complete Lion Set (Baxendale and Co.) all as per sample at Town Hall, and from the same firm, including firelay basin, 3 gallon syphon cistern and galvanized

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steel telescopic flush pipe. Provide and fix $1\frac{1}{4}$ in. by $1\frac{1}{4}$ in. T iron girder, two cast iron brackets and 3lb. lead cone as per sample at the Town Hall, all in addition to the above—these are not included in the price of the set named.

Provide all nails, pads, screws, tacks, wrapping, canvas, copper wire and paint, &c., needed to fix them, and also for the purpose of this tender 9 yards of $\frac{1}{2}$ in. 6lb. lead water mains, laid 2ft. 6in. deep except where it joins present service and connect same to house supply and w.e. cistern, and lead overflow to each cistern carried through the wall as directed. Any extra lead pipe needed to make this connection from the main to the cistern to be paid for at the Schedule following, and any deduction in length to be made also at the same rate.

The basin to be fixed by lead plugs on a 2ft. by 2ft. by $2\frac{1}{2}$ in. concrete block as per sample at Town Hall. (Flag to be supplied by Contractor).

Make good the floor round the w.e. basin with 6in. by 6in. 1in. red tiles laid on and grouted with mortar. Whitewash the interior of the w.e. with two coats good hot lime.

All the foregoing work for the sum of

CLAUSE 5.

In those places where, owing to the extreme lowness of the building, it is found necessary to raise the walls and roof, the walls are to be raised (15 inches for the purpose of this tender), and the old roof materials—so far as they are approved by the Surveyor—are to be raised and put on again, and the slating full tierced underneath, for the sum per closet of

ALTERNATIVE CLAUSE 5.

If a new roof is required, it is to be constructed of $4\frac{1}{2}$ in. by 3in. wall plate, 3in. by 2in. spars, 16in. centres 2nd. Velnhelli Countess slates laid to a 3in. lap on 2in. by $\frac{3}{4}$ in. battens, and nailed with two large headed galvanized nails to each slate, and full tierced with hair mortar at an inclusive price per superficial yard of

Note the following prices are to meet deductions, and additions:—

4in. drains 3ft. deep to invert and any depth under 3ft. to include excavation, timbering if necessary, filling in and testing with water, and making good, inclusive of paving	...	...	...	...	per lineal yard.
4in. ditto. Over 3ft. 0in. and under 4ft. 6in. deep and do.	..	..	..	..	..
4in. „ „ 4ft. 6in. „ 6ft. 0in. „ „ „	..	..	..	..	..
4in. „ „ 6ft. 0in. „ 7ft. 0in. „ „ „	..	..	..	..	..
Extra cost for 6in. pipes over 4in.	...	...	...	...	..
„ 6in. intercepter over 4in.	...	...	...	...	each
Yard Gully (as per sample)	...	...	...	...	..
Yard Gully with dish stone (as per sample)	...	...	...	...	..
4in. Rest Bend	...	...	...	...	..
9in. new brickwork	...	...	...	..	per sup. yd.
9in. brickwork if built with old bricks	...	...	...	..	..
$4\frac{1}{2}$ in. „ „ new	...	...	...	...	..
$4\frac{1}{2}$ in. „ „ old	...	...	...	...	..
$\frac{3}{4}$ in. lead pipe (6lbs. per lineal yard)	...	...	...	..	per lin. yd.
4in. by 3-16 ventilating pipe as specified
4in. by 3-16 off-set	each
4in. by 3-16 obtuse bend

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Bricklayer	per hour
Labourer	"
Joiner	"
Slater	"
Plumber	"

I (or We) understand that the work is to be carried out in the localities indicated by the Surveyor, and we undertake to paste notices of caution (which will be supplied by the Council) on closet doors, and further, we agree to the following clause.

The Contractor shall, during the continuance of this contract, pay, or cause to be paid to all workmen engaged upon the work, the subject of this contract, not less than the recognised minimum standard rate of wages and observe the hours of labour recognised in the district, and if it shall be proved to the satisfaction of the Council that the Contractor, or Sub-Contractors (if any), have paid less than the minimum standard rate of wages, or not observed the hours of labour as aforesaid, the Contractor shall pay to the Council as and for liquidated damages, a sum of twenty shillings for each and every case in which such underpayment or non-observance shall be proved, and it shall be lawful for the Council to deduct any such sum or sums from any monies due, or to become due, to the Contractor under this contract and we agree to abide by the general conditions, and we undertake to remove all debris and to leave all in perfect working order at the completion of the contract.

Name.....
 Address.....
 Date.....

The Council do not bind themselves to accept the lowest or any tender.

This is a copy of the Pocket Book used for notes on measuring up the work:—

No.	Owner	Street.	£	s.	d.
Clause 1	Privies making good	...	...	...	...
" 2	Drains, &c.	...	...	...	...
" 3	Louvre	...	...	...	...
" 4	W.C.'s, &c.	...	...	...	...
" 5	Old Roof	...	...	...	...
" 5a	yds. New Roof	...	...	...	...
Add	Deduct				
	4in. drain 3ft. deep	...	...	...	...
	4in. " 4ft. 6in. "	...	...	...	...
	4in. " 6ft. "	...	...	...	...
	4in. " 7ft. "	...	...	...	...
	Extra for 6in. pipes	...	...	...	...
	" " 6in. interceptors	...	...	...	...
	9in. New Brick	...	...	...	...
	9in. with Old Brick	...	...	...	...
	4½in. New Brick	...	...	...	...
	4½in. with Old Brick	...	...	...	...
	Lead Pipe	...	...	...	...
	Vent Pipe	...	...	...	...
	Offset	...	...	...	...
	Bricklayer
	Labourer
	Joiner
	Slater
	Plumber
	Date of Smoke Test
	" Water "
	Approved

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The following are the particulars of the Conversion of Privies into Water-Closets:—

	£	s.	d.
Public Health Act, 1907, parts 2, 3, 4, 5, 6 and 10, except Sections 92, 93, 94.			
Notice given, October, 1908.			
Adopted, December, 1908.			
Surveyor first reported to Committee under Section 39, P.H.A.A., 1907, November 28th, 1911.			
Estimated number of conversions to be done, 2,600.			
Surveyor's Estimate, average cost, including supervision charge of 5%, for conversion	8	0	0
Council adopted scheme, December, 1911.			
Resolved to apply for £8,000 as a first loan.			
Tenders for 1,000 invited December, 1911.			
Tender accepted, average cost per conversion...	6	18	9
Basis of Tender.—Specification Schedule designed to allow for the great variation of types and sizes.			
Actual average cost of first 1,000 (exclusive of 5% supervision charge paid to the Council)	6	17	7
Particulars supplied to Local Government Board along with application:—			
Plans of typical cases.			
Specification and Estimate.			
Local Government Board Inquiry held Feb. 2nd, 1912.			
Sanction received March, 1912, for a loan of £4,000 to be borne by the Council, to be repaid in twenty years, and £4,000 in respect of owners, to be repaid in seven years.			
Method adopted to carry out the work and the keeping of Accounts:—			
Ward Divisions taken and subdivided into districts and each district completed at one time.			
Pocket Book arranged for particulars of measurement and sketch of each conversion with date of testing same.			
Ledger Account for each conversion; both Pocket Book and Ledger paged in accordance with Specification Tender Form clauses.			
Apportionment Book.			
Work commenced May, 1912.			
First 1,000 completed February, 1913.			
To maintain continuity of work—			
Surveyor reported progress November, 1912, and obtained permission to advertise for completion of the remaining 1,600 privies.			
Owing to rise in prices, Surveyor's estimate, including 5% supervision charge, raised to	8	10	0
Tenders invited, November, 1912.			
Tenders accepted, January, 1913, for	7	15	8
Actual average cost of second 1,542 closets, exclusive of 5% supervision charge paid to Council	7	3	11
Application for second loan made to Local Government Board for £10,000, January, 1913.			
Sanction received without further Inquiry, March, 1913, apportioned as below:—			
£4,000, owners' share, to be repaid in seven years.			
£6,000, Council's share, to be repaid in twenty years.			

NOTE.—The reason that the whole sum as shewn to be required by the estimate for the second portion, i.e., £13,600, was not borrowed because the owners had paid up on the first 1,000, in many cases in full, to an amount equal to 50% of the whole. This proportion has been maintained throughout the second expenditure.

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Second contract began, March, 1913.	£	s.	d.
1,542 closets completed, March, 1914.			
Total time taken to complete 2,542 closets, 23 months.			
Average per month,	110	5	
Average cost of 2,542, exclusive of 5% supervision charge			
paid to Council (not to any official) ...	7	0	11
Total sum paid to Contractors for 2,542 conversions ...	17910	17	10
Total expenditure, including charges ...	18795	17	10
Number to be completed, about 18.			
Difference between estimated number accounted for by			
obsolete property already demolished and to be demolished.			

JAMES WILDING, F.S.I.,

Surveyor and Water Engineer,

Runcorn Urban District Council.

June 19th, 1914.

CONGLETON BOROUGH.—“There are 2454 pail closets, which are emptied weekly and 330 midden privies, or 80 less than last year, which are emptied on notice given. The latter are gradually being replaced by pail or water closets and will soon cease to exist. Forty-nine water closets were supplied during the year, viz. :—Twenty-nine to replace pail or privy closets, six to factories and 14 to recently built houses, making the number now in use about 550. In future all new buildings will require to have water-closets.”

CREWE MUNICIPAL BOROUGH.—“The following figures give the approximate number of the several forms of closet accommodation in the town at the end of the year 1913 respectively :—

	1913
Water-closets	7379
Waste Water-closets... ..	1005
Pail Closets	2884
Uncovered Privy Middens	—
Covered „ „	251
Cesspool Privies	—
Fixed Receptacles	2
Total	11,521
Number of Houses Concerned ...	10,405

“The work of reconstructing insanitary conveniences has progressed in 1913, with the result that there are 133 more water closets in old property than was previously the case. The details of these reconstructions are :—

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	Dust- bins.	Covered Ashpits.	Privy Pails.	Water Closets.
26 Mixens were converted into	18	8	4	22
110 Privy Pails were converted into	—	—	—	110
57 Ashpits were converted into	57	—	—	—
1 Tipper Closet was converted into	—	—	—	1
Total	75	8	4	133

In the 42nd Annual Report of the Local Government Board (1912-1913) information is given as to the types of sanitary conveniences in each Urban District in England and Wales with a population of 5,000 and over. The 724 towns there reported upon are divided into those on the water carriage system and those on the conservancy system, the former includes towns in which only 4 per cent. or less of the total number of closets are of a type other than the water closet. 357 of these towns (49.3 per cent.) can be classified as water carriage towns and 367 (51.7 per cent.) as conservancy towns. As the percentage of conservancy closets in Crewe in 1911—the census year was taken as the basis of the table—was 29.4, the borough could not be classified as a water carriage town. The reconstructions effected since 1911 have reduced this percentage to 27.3, so that at the end of 1913, 72.7 per cent. of the sanitary conveniences in the borough were on the water carriage system.

“The existence of 3,137 conservancy conveniences in the borough is undesirable and one would cite the following points as reasonable arguments for a more expeditious conversion scheme being adopted:—

- (a) The increased facilities which pail and mixen closets afford in hot weather for the spread of infection by means of flies.
- (b) The increased risk of infection from the excreta or tuberculous patients when the same is disposed of by conservancy methods.
- (c) The nuisance caused by the emptying of these conveniences and the carting of the contents through the streets.
- (d) The greater risk which exists of enteric fever spreading when it occurs in a house on the conservancy system.

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“To the above public health reasons for conversion there can also be added this financial one. During the last seven years it has cost this authority £6,594 to carry out the necessary scavenging of these conveniences and although the annual cost has diminished from £1,194 in 1907 to £811 in 1913, this latter amount cannot be proportionately reduced in future under the present statutory powers possessed by the Corporation. The money expended on the scavenging of conservancy conveniences could be spent with advantage in exercising the adoptive powers available under Section 39 of the Public Health Acts Amendment Act, 1907, *re* the conversion of pail closets and mixen privies. The adoption of the section would also give the Corporation the power to prevent the erection of any more such conveniences.

“The approximate number of dustbins etc., at the end of 1913, was :—

Dustbins	...	...	...	7,417
Covered Ashpits	...	...	...	2,561
Uncovered „	...	...	...	44

The scavenging required to deal with the house refuse, trade refuse, the waste paper and the nightsoil is carried out under the superintendence of your Chief Sanitary Inspector. Weekly scavenging of all house refuse would be advantageous. Since the initiation of the collection of waste paper in 1903, from bags supplied by the Health Committee, this work has steadily increased and a re-adjustment in the organization has been called for to cope with it. As is shown by the table, in 1903 the quantity of paper equalled the capacity of 11,160 bags, in 1913 it had increased to the capacity of 26,898 bags. On the initiation of your Chief Sanitary Inspector, arrangements were made in October for the sale of the waste paper and since then nine tons 12 cwt. were sold at 10s. a ton. The refuse is disposed of on tips at the Corporation Farm and elsewhere. During the summer months the spraying of the walls and floors of covered ashpits was carried out. This was done on 4,481 occasions with a two per cent. solution of chlorox, as a preventive measure against epidemic diarrhœa. Information has been obtained with reference to a refuse destructor, but pressure of work in other directions has hindered the preparation of the special report. The need for a destructor increases.”

DUKINFIELD MUNICIPAL BOROUGH.—“At present there are four systems of closets, viz. :—Ashpit privies, pails, automatic flush closets, and fresh-water closets. The Committee have

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advocated a steady substitution of water carriage for the two first systems just mentioned. Wherever practicable fresh-water closets are put in rather than the automatic flush. There is no doubt if the annual charges for water supply, 10/6 per closet, were less, it would hasten materially the number of conversions. One hundred and nineteen closets have been converted during the year. The intention is, where possible, to carry out the principle of *one house one closet*.

“The approximate number of each type of closet is as under:—

Ashpit privies. .	...	...	779
Pails ...	...	...	484
Automatic flush closets	...	1369	
Fresh water closets	...	...	683

The accommodation of these several kinds are adequate to meet the requirements of the district. The Committee is gradually reducing the number of ashpit privies by conversion on to the water carriage system either by means of the automatic flush or fresh water. The number so dealt with during 1913 is as follows :—

No of Houses dealt with	...	...	119
„ Fresh water closets erected...			53
„ Slop ...	...	...	47
„ Ashpit privies dispensed with			55

HYDE MUNICIPAL BOROUGH.—“Scavenging of the streets is under the direction of the Borough Surveyor. Ashpits, bins, privies, etc., is under the sanitary department. The approximate number of midden-privies in the district is 133, dry ashpits 1,299, pail closets 98, ashbins 2,362 and cesspools 16. The pail closets and ashbins are emptied weekly, the dry ashpits and midden privies monthly, or oftener if required.”

STALYBRIDGE MUNICIPAL BOROUGH.—“The greater portion of the town is now on the water carriage system, for rapid strides continue to be made in the conversion of privies into either waste water or town's water closets, with receptacles for house refuse and these conversions are mostly taking place among the worst types of privy ashpits. Since October 1st, 1907, the sanitary department has had entire control over the removal and disposal of all midden and house refuse in the borough. which, with the exception of that from the Carrbrook and Hey Heads districts, is now conveyed to the town's destructor at the ‘Flatts.’ The refuse destructor, erected by Heenan and Froude, of Manchester, is a five-cell furnace of the ‘Heenan’ Patent Top Feed type and is

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furnished with all the latest improvements. The plant is shut down about every six weeks for a few days to allow of the cleaning of the combustion chamber, the flues, the superheater, etc. Good result has been attained partly by improved sanitary conditions and partly by the efforts of Miss Hanson, our Lady Sanitary Inspector, who is a most zealous worker."

"The conversions from the privy midden and pail systems to the water-carriage system have been steadily going on during the year and the total consists of 91 town's water and 14 waste water closets. To these figures must be added 63 town's water and two waste water closets which have been erected mainly in consequence of the conversions having taken place. At several properties where previously the privy system maintained, the accommodation worked out at three houses for each convenience; this arrangement has now been abolished and one water closet for each house has been erected. Greater attention has also been paid to the reconstruction of the drainage on many premises where surface drains were in vogue. New pipe drains and gully traps have been substituted and the surface of the yards considerably improved and brought up to modern requirements. A weekly inspection of the water closets in the borough is carried out and where any blockage is found an attempt is made by the man to remove the same. Where it has been of a temporary character he has removed the same; but if the blockage has required attention to the drains, then preliminary notices have been sent to the agents or owners of the properties involved. By this means 103 water closets have been unstopped and 40 notices have been served requiring the owner to attend to the same. This procedure has produced the desired effect of assisting the property owner, as well as preventing a state of affairs from existing which would be anything but desirable.

	Town's Water Closets.		Waste Water Closets.		Total.
The Conversions comprise	91	...	14	...	105
The additions comprise	63	...	2	...	65
	—		—		—
	154		16		170
	—		—		—

"The following is the approximate number of the sanitary conveniences in your district :—

		How frequently scavenged.
(a) Midden-privies ...	1623	Every two months.
(b) Dry Ashpits ...	359	Every month.
(c) Pail Closets ...	176	Weekly.
(d) Dustbins ...	2173	Fortnightly.
(e) Cesspools... ...	6	— " "

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ALSAGER URBAN DISTRICT.—“Scavenging is carried out by contract. The following is the approximate number of sanitary conveniences in the district :—

			How frequently scavenged.
Midden Privies	315	about ...	Fortnightly or as required.
Dry Ashpits	30	„ ...	As required.
Pail Closets	22	„ ...	Weekly.
Dustbins	630	„ ...	Weekly.
Cesspools	30	„ ...	As required.

“The work has been done thoroughly. Ashes and other refuse are collected from the dwelling houses in boxes, which are emptied into carts and removed every week.”

ALTRINCHAM URBAN DISTRICT.—“A statement as to the privy and water closet accommodation is given below :—

No. of Common privies	...	...	1746
„ Movable receptacles	...	...	19
„ Fresh water closets	..	...	2121
„ Waste water closets	...	...	208
Total			4094

“The number of privy conversions into water closets during the year was 44.

“The removal of dry refuse is carried out weekly and the cleansing of privies, ashpits, etc., is regularly carried out by the Council's workmen at periods of about once a month or less. The supervision of this work has been transferred to the Surveyor's Department, as recommended by the Local Government Board's Circular.”

ASHTON-UPON-MERSEY URBAN DISTRICT.—“Good progress has been made during the year with the privy conversion work under the 1907 Act. The number of privy middens at the beginning of the year was 533. Since then 152 conversions have been made, 147 under the Act of 1907. The total number of privy middens is now 381.

Fresh water closets	...	...	1,426
Waste water closets	...	...	16 ”

HIGHER BEBINGTON URBAN DISTRICT.—“Nearly all the houses are provided with water closets, but in the more rural portion of the district there are 14 privy middens and six pail closets. Seven houses drain to cesspools. Scavenging is performed by contract.

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The house refuse and contents of the midden privies are removed by the contractor at short intervals. There are still 138 ashpits, but dustbins have been substituted in place of ashpits at 198 houses out of a total of 352. The cost of scavenging is about £80 per annum."

LOWER BEBINGTON URBAN DISTRICT.—"Water carriage is the general rule throughout the district, the conservancy system having been abolished so far as houses within reach of the sewers are concerned. The 10 midden privies which still persist have their contents emptied on garden land for manurial purposes. There are two houses drained to cesspools.

"There are 2,659 inhabited houses, 2,193 of which are provided with movable refuse receptacles with proper covers; 456 have ashpits and 10 have ashpits in combination with privies. During the last four years 229 refuse middens and ashpits have been replaced by bins and the latter or covered and cemented ashpits are required to be provided in connection with all new houses. Refuse is collected by the Council's employées, bins being emptied once a week and ashpits at monthly intervals. Covered carts are used in collecting, but where there are ashpits the material removed has to be temporarily deposited on the street surface. The method of disposal of the refuse when collected is by tipping on a site situated in the midst of agricultural land, 300 yards from the nearest dwelling house and about one mile from the centre of the district. No trade refuse is dealt with. Street scavenging is well done, the main roads being cleansed daily and other roads weekly or as often as may be required. Farmers and others remove the manure from cowsheds and stables. In the more urban parts it is removed once a week.

"The difficulty of finding suitable sites for tipping has induced the Council to acquire an area for the erection of a destructor in a convenient situation. Work in connection with this undertaking is proceeding and a two-cell back feed destructor steam jet blast, with combustion chamber, having charging door for carcases, is to be erected by Messrs. Dawson and Manfield. The chimney is to be 75 feet in height and the destructor is guaranteed to reduce the refuse to innocuous clinker. The capacity is 25—30 cwts. per hour and the accepted tender for the work is £2,650. It was stated at the Local Government Board inquiry that the population of the district might be doubled without necessitating any increase in the destructor."

BOLLINGTON URBAN DISTRICT.—"535 houses are now supplied with water closets, there having been a further 48 fixed during

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the year. The number of movable ashbins with covered tops is now 223. With regard to the emptying of privy middens, one cannot quite say that all cause of complaint has been removed. Whilst this relic of ancient days is still permitted it is impossible not to give offence in their emptying. The nuisance inspector does his best to get the work done as quickly and with as little unpleasantness as is possible. It must be remembered that he is dependent on the amount of 'hustle' he can infuse into the farmers, a class of men who are not noted as a rule for being in a hurry. There is no doubt some ground for the complaint that the middens are left too long before emptying, though in this respect the improvement is very great. When all is said and done it is an insanitary system and the sooner it can be abolished entirely the better."

BROMBOROUGH URBAN DISTRICT.—"Dustbins are emptied once a week and ashpits and privies once a month. The Council employ their own men for this work. Six houses drain to cess-pools which are emptied by the owners when required. Covered carts are not used in the collection of refuse and deposit of refuse in the work of collection where there is no cart-road to the ashpits. Movable receptacles of galvanized iron with proper covers are gradually being substituted for ashpits. 279 of them are in use and they are supplied to all new houses. There are 47 fixed ashpits in connection with privies and 62 not in such combination. The refuse is disposed of by tipping on a site 200—300 yards from any dwelling-house.

"In the more urban portion of the district water closets are the rule and at my inspections I found them clean and well looked after. There are 47 privies in existence, three fewer than in 1912 and 21 fewer than in 1910."

ELLESMERE PORT AND WHITBY URBAN DISTRICT.—"In the main the town is provided with water closets, but in the Whitby portion there are at least 16 midden privies in connection with houses which are within easy reach of the sewers and where the owners have been served with notices to convert them to water closets. The persistence of these abominations is bound, in my opinion, to prove detrimental to the development of the Whitby area.

Number of Water Closets	...	2,156
Number of Privy Middens	...	94
Pail Closets ...	...	1

"*Scavenging.*—Last year the Council were asked by me to consider 'the advisability of employing their own workmen and

carts to keep the refuse receptacles in an empty state' and the relative merits of this and the contract system have been debated on several occasions in the Health Committee, but without arriving at definite conclusions.

"All refuse is disposed of within the district on a tip in the village of Whitby. The contractor is not allowed to tip nearer than 70 yards from dwelling houses and is required to cover the tipped refuse with soil every five weeks. The refuse is conveyed to the tip in carts—one covered cart and one open with covering sheet. The Council send a cart with a covering sheet round to the shops in the district every Monday, to collect the waste paper, etc., and this refuse is destroyed by burning. The Council employ their own scavengers and the sweepings are carted on to agricultural land. The Council do not remove the manure, but arrangements are made for the weekly removal of the manure by the different owners."

HALE URBAN DISTRICT.—"The method of scavenging in vogue aims at the removal of refuse without soil pollution, as follows :—A low built lorry laden with air-tight bins is drawn to the various parts of the district. To the rear of the lorry a rubber-tyred trolley is attached. Having arrived at the destination, a bin is placed on the trolley and this is drawn and placed against or near the receptacle to be emptied and the contents of the latter are emptied direct into the bin. When full, the bins are taken to a tip and emptied there. This method is employed in all privies, pail closets and ashpits and has proved very satisfactory indeed and economical. Owners and occupiers are being encouraged to replace ashpits by bins and during the year 45 ashpits at 85 houses and 21 dry ashpits at 26 houses have been abolished and ashbins substituted. Ashbins are emptied direct into a covered cart. The air-tight bins used for the removal of the refuse are from time to time washed out with disinfecting solution and at other times are dusted with carbolic acid powder, each being done according to requirements. Privy ashpits are emptied every six weeks, dry ashpits every second month and bins weekly or fortnightly, according to circumstances and in all cases more often if required. Any request or complaint is at once attended to."

HAZEL GROVE AND BRAMHALL URBAN DISTRICT.—"The collection of house refuse is performed by the Council's own employees, privy ashpits being emptied about once in two months ; dry ashpits, once a month ; metal bins, once a fortnight. Uncovered carts with high sides are being used in collecting and emptying on to yards or streets, except in the case of ashbins, where the contents are tipped direct into the cart. The following are the actual numbers,

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as counted, of the respective types of ashpits or receptacles within the district, viz. :—

	Pail Closets.	Privies.		Dry Ashpit.	Metal Bins.	Other Receptacles.	W.C.s
		Ashpit.	Closet.				
Hazel Grove Drainage Area ...	6	643	1040	281	126	10	690
Bramhall Drainage Area ...	—	120	158	414	134	26	1002
<i>Totals in Whole District</i> ...	6	763	1198	695	260	36	1692

“During the past year 17 privy closets have been converted into 18 water closets.

“The whole of the house refuse is disposed of within the Council’s district by tipping on tips rented by the Council, except a very small proportion which is given to farmers for agricultural purposes. The tips referred to are three in number and comprise :—Macelesfield Road Tip, situate off Macelesfield Road, and consists of a low-lying piece of land about three and three-quarter acres in extent, the tip itself being about 500 feet from the nearest house. This tip is for all classes of refuse. Robins Lane Tip, situate off Robins Lane, Bramhall, is a deep dingle which is being filled up with dry ashpit refuse only, to form the site of a new road across such dingle. This tip is 500 feet away from the nearest house. Tenement Lane Tip, situate off Tenement Lane, is a similar tip to the Robins Lane Tip in character and is 500 feet away from the nearest house.

“The Council have not undertaken the removal of trades refuse, the tradesmen themselves undertaking this work. There are about 45 sewage cesspools within the Council’s district, which are cleansed as often as required by owners, as the Council do not undertake such cleaning.”

HOLLINGWORTH URBAN DISTRICT.—“The scavenging of all premises is carried out by the Council and also by private owners and is now quite satisfactory. The old property is in most cases served by midden privies, which are being gradually abolished. Dry ashpits, pail closets and dustbins are also found. The approximate numbers are :—

Midden privies ...	...	218
Dry ashpits ...	...	168
Pail closets	108
Dustbins	28
Cesspools...	3
Waste water closets	...	54
Town’s water closets	...	44

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HOOLE URBAN DISTRICT.—“The whole of the privies in the district have been converted except in the outskirts and there is ample accommodation. In Piper’s Ash there are 34 privies and four pail closets. The scavenging has been carried out daily by men in the employ of the Council. The streets have been kept clean and have been well watered whenever necessary. Midden privies, 34 in number, are scavenged monthly. Dry ashpits 56 (28 of which are covered) are scavenged weekly. Pail closets, 4, weekly. Dust bins and boxes, 1,186, weekly. Cesspools, 7, weekly.”

HOYLAKE AND WEST KIRBY URBAN DISTRICT.—“The district is provided throughout almost its entire extent with water closets and the conservancy system has been abolished, wherever practicable. In the whole area there are only ten privy-middens in use.

“Scavenging is carried out by a staff of men in the employment of the Council and is adequately performed. A motor lorry and covered carts are used in the collection and conveyance of refuse, which is disposed of by tipping on a site in the adjoining Rural District. After tipping it is sorted and the materials picked out are sold. Any nuisance which might arise from the tip is minimised by covering the deposit with 18 inches of soil.”

KNUTSFORD URBAN DISTRICT.—“Mr. Marshall says:—There are approximately 83 privies, 149 slop or waste water closets, 147 peat-pails and 869 water closets. Five privies and 27 water-closets were repaired.

“During 1913 there have been three privies and seven pail-closets converted to water closets and ten additional water closets provided to cottages which before had only a joint use of conveniences.”

“Twenty-nine insanitary ashpits have been abolished and 79 galvanised iron covered bins provided. This work is being pressed steadily forward ; a circular letter having been sent to all owners of unconverted conveniences, inviting them to keep abreast of the general movement for sanitary improvement. 1935 ashpits have been cleansed and 8172 pails. 38689 ash-bins have been emptied and 2826 cart-loads removed to the tip.”

LYMM URBAN DISTRICT.—“House refuse is deposited in ash-pits and ashbins which are emptied by public scavengers at intervals as required. Ashes and refuse are conveyed by the Council’s servants to tips. Nightsoil is made use of by farmers.”

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MARPLE URBAN DISTRICT.—“The disposal of excrement in the district is by three methods, viz., water carriage, pails and middens. We are still converting privy middens into water closets as rapidly as possible. The number of such middens have fallen from 833 last year to 696 this, but much still requires to be done. There are now 600 water closets and 309 slop water-closets. In the whole of the district there are only 20 cesspools. You will see from the Inspector's Report that no less than 387 sanitary defects were inspected in the year and 227 abated, with 160 still in hand. The pails and middens are emptied by the Council's men as quickly as possible, but it is impossible to do all this at night and the result is not very satisfactory. Ashbins and pails are collected weekly. There are 777 ashbins, compared with 90 seven years ago. The refuse is deposited on tips away from habitation.”

MIDDLEWICH URBAN DISTRICT.—“The Council provide workmen and team labour is contracted for. Night soil is only removed between 10 p.m. and 6 a.m.

“This is the approximate number of the following in your district :—

	How frequently scavenged ?		
(a) Midden-privies			
(b) Dry Ashpits	...	526	1 in 6 weeks.
(c) Pail Closets	...	534	Weekly.
(d) Dustbins	...	269	Weekly.
(e) Cesspools	...	428	1 in 6 weeks.

The Cleansing Superintendent reports :—“The tips number at present five and with the exception of two are well away from any houses ; one tip started to smell towards the end of the year, but I am strongly of the opinion it was not the refuse itself, but the pressure of the refuse on the mud in the pit ; however, certain work has been done which I have every reason to believe will prevent a recurrence of the nuisance. The other tips are in every way in very good order and no complaints have been received regarding them.”

NESTON AND PARKGATE URBAN DISTRICT.—“The conversion of privies to water closets proceeds slowly, owing in great measure to a failure to recognise the advantages to the community which will be derived from the removal of the loathsome and insanitary midden privy from the midst of a population which is still inclined to consider itself rural and to tolerate sanitary conveniences in no way adapted to the changed conditions of the area. The neighbouring Urban Districts of Hoylake, West Kirby and Lower

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Bebington have abolished their midden privies and in Ellesmere Port very few are left.

“Conversion of privy middens to water closets :—

1911.	1912.	1913.
4	16	23

“In addition to the 23 conversions 14 new water-closets were supplied to old houses. The approximate number of each type of closet is :—

Privy Middens	...	...	...	352
Water Closets	...	...	...	675

“There are 39 houses draining to various types of cesspool arrangements.

“Apart from midden privies there are approximately 200 ashpits in the district, many of which are of very large capacity, badly constructed, difficult to empty and impossible to clean in a satisfactory manner. On the other hand there are some 375 galvanised bins with proper covers in use and it is satisfactory to record that these are on the increase, for during the last few years over 100 have been substituted in place of ashpits. The galvanised iron bin is provided in connection with all new houses. Refuse is collected by employees of the Council weekly, or fortnightly as regards bins and monthly where other receptacles are provided. Abolition of all ashpits and the substitution of bins would facilitate the work of collecting refuse in a very marked way and would obviate the necessity for workmen climbing in among the filthy debris of the privy middens, furthermore deposits of refuse on yard surfaces and streets awaiting the carts would no longer offend the eyes and nostrils of the ratepayers. The carts employed by the Council for the collection and removal of refuse are not covered and a proposition (arising out of a complaint) that tarpaulin covers be provided was negatived. The final disposal of refuse is on six tips on agricultural land within the district. Most of these are situated far away from dwelling houses, but in one instance the nearest house is within 80 yards. Street scavenging is carried out by employees of the Council and has improved within recent years coincident with a better surface on the streets, which in the main thoroughfares are tar sprayed. In the months of July, August and September an attempt is made to keep the refuse receptacles practically empty, in an endeavour to prevent the recurrence of infantile diarrhoea. It may be stated that partial success is obtained as the outbreaks do not affect nearly as many children as in the years before the Council undertook this work.”

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NORTHWICH URBAN DISTRICT. — The Sanitary Inspector reports :—"This work is still carried out under one contractor and continues to give great satisfaction both to the public and myself. Tips have now become a serious question, as the one in use in Leicester Street is nearly used to its fullest extent and will soon have to be discontinued as a tip for dry refuse. The Council have under consideration the erection of a destructor. This will meet a long-felt want and remove a serious menace to the health of the town. The conversion of pails and cesspools to the water carriage system will in the near future reduce the cost of scavenging as well as improve the health of the town. Nine cesspools have been put on the pail system and the cesspools removed, the neighbourhood being unsuitable to the water carriage system. There were no ashpits to these houses but they are now supplied with suitable galvanized ashbins which are removed weekly. During the year 113 sanitary pails have been supplied by the Council, 79 of which were renewals replacing leaky and defective pails, the remaining 34 being applied for by property owners for the purpose of replacing pails that had not been purchased from the Council. The cost to the Council for replacing these pails will become less as the water carriage system increases. There is a serious danger in connection with sanitary pails where the duplicate system does not exist, as pails that have been in use for a few years become encrusted with excreta and other matter retaining disease of all descriptions for an indefinite period to the danger of anyone using the closet. During the year 45 cesspools and pails have been converted into water-closets, the cesspools filled up and the pails removed. The ashpits in connection with these houses have also been removed and ashbins supplied in their place. The removal of the ashpits and the substitution of ashbins increases the work of scavenging, as they have to be removed each week, but they are an improvement to the sanitation of the district.

"The scavenging for the whole district is done by one contractor and necessitates the emptying of :—

965 dry ashpits ... monthly.	1676 pail closets ... weekly.
1115 dustbins ... weekly.	278 cesspools ... monthly.

"The present system of pails is costly and insanitary and a conversion to water carriage will be enforced whenever practicable ; to do this however means that a greater water supply must be acquired. The contents of ashpits and dustbins are 'tipped' in Leicester Street and as this is nearly exhausted and causes some nuisance, the need for a destructor becomes more urgent and should be provided at an early date."

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RUNCORN URBAN DISTRICT.—“I indicated in my last report that the Town Planning Act had been put into active operation and since then a perfect transformation has taken place over the Urban District area, from May, 1912, to December 31st, 1913, 2,394 privies having been converted into water closets, a feat unsurpassed in any sanitary district and to the great and manifest advantage of the community generally. When this great work is completed and it is nearing completion now, the authority will have every reason to be proud of the fact that they were amongst the earliest sanitary authorities to take advantage of the provisions of the Act and to push on improvements that must have, in the course of time, far-reaching consequences. At one time you could not pass down or up a passage between two rows of houses without having to pass a battery of privies, with their malodorous contents; that condition is practically a thing of the past now and will no longer be the happy hunting and breeding ground of flies that do so much mischief and have done so much harm in quite an unsuspected manner in times past. It will now rest with the occupants of houses themselves to make this revolution in sanitation the success hoped for. It will enable them to live cleaner and purer lives and in spite of many of themselves they will at all events breath purer air, and this should appeal to all to keep the house backyard scrupulously clean, closets clean and to avoid making misuse of ashes and dustbins that are left at people's back doors; they are there for no other purpose—all vegetable and house refuse of whatever description should be burned and not dumped with other deposits at the back door, or in the ashbin and this can easily be done if people would only try. It is just as well to mention that the authority is armed with great power to prosecute the occupants of any house where the ashbins are misused and it is just as well to warn offenders that this will be done and done without scruple.”

SALE URBAN DISTRICT.—“At the close of the year there were—

Privy ashpits	...	...	1,000
Pail closets	...	...	50
Fresh water closets	...	...	2,915
Waste water closets	...	...	35

“The above table shows that steady progress has been made in converting the privy ashpits into the water carriage system. 110 conversions in the past year, being nearly double the number of the previous year (60).”

SANDBACH URBAN DISTRICT.—“The improvement in the closet accommodation is being gradually maintained. During the

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year 22 privies have been converted into pails and 38 water closets have been fixed.

The numbers of the different types of closets in the district are now as follows :—

Water closets	240
Pails	432
Earthenware cesspools ...	22
Privies... ..	539

“House refuse is removed by the Council’s employees. Gradual improvement is also being made in the ashpit accommodation. During the year 42 ashbins have been provided by property owners at the request of the Nuisance Inspector and the number of ashbins in the district, which are emptied weekly, is now 221. The closets are cleansed by the Council’s workmen. The work under this heading is carried out systematically in districts and requisition forms are available at the Town Hall for urgent cases. These forms are numbered and when filled up are entered on a list each day by the Inspector of Nuisances and the date when they are dealt with is also recorded.”

TARPORLEY URBAN DISTRICT.—“Scavenging is not carried out by the local authority but by private arrangement, each householder as a rule disposing of his own refuse. Your Council provide tips.

“The approximate number of conveniences is :—

1. Midden privies	Very few
2. Dry ashpits	120
3. Pail closets	50
4. Dustbins	0
5. Cesspools	About 200

“In Tarporley some of the privies were old and inadequate and your Council decided to have them converted into water closets as early as possible ; 20 of these were converted during the year 1913. In the other townships, where there are old and dirty privies, pail closets are being substituted, as most of the cottages have good gardens.”

WILMSLOW URBAN DISTRICT.—“The Council now undertakes the scavenging of the district. The dry refuse is put on farm land to fill up the hollows and the nightsoil on bog and farm land to be used as manure. Sixty houses have had movable ashbins with proper covering substituted for fixed receptacles during the year. The closet accommodation consists of water closets and ashpit privies. There are approximately 752 of the former and

765 of the latter. Thirty-two privies were converted to water closets during the year."

WINSFORD URBAN DISTRICT. — Mr. Hickson reports as follows:—"There are about 1,054 cesspool closets (a type confined, so far as I know, to this district and one or two of its neighbours) and about 20 privy-middens, being a reduction of 136 in the year. Of these 125 have been converted to proper water closets and 11 to peat-pail closets the latter being entirely at outlying places where there is no main sewer. There are about 875 water-closets, an increase of 137 ; 125 as above, one replacing a peat-pail and 14 at houses newly erected. Of peat-pails there are 516, an increase of 10 ; 11 have taken the place of old privies, whilst one has been replaced by a water closet.

"*Scavenging.*—This work has been re-organised and the peat-pails have been placed under the control of the Inspector of Nuisances. The remainder of the scavenging is in the hands of the Surveyor. The peat-pails are now scavenged by contract, all team and manual labour being provided by the contractor, as also the place of deposit. The work is done between 10 p.m. and 6 a.m., instead of during the daytime. The pails are emptied, cleansed and re-charged with peat-dust and vitriol once each week, a clean pail being left in exchange at each house. The manure is taken to a depot outside the district and distributed on land well removed from inhabited parts. Privies are emptied quarterly by contract. The ash scavenging is carried out by the Surveyor and his staff ash-bins being emptied fortnightly and ash-pits monthly. 137 covered galvanised ashbins have been provided during the year for houses which had insanitary ashpits, or no provision at all. Special circulars have been issued to all owners and occupiers requiring the provision of covered iron receptacles and prohibiting the deposit of ashes or other refuse on the streets."

YEARDSLEY-CUM-WHALEY URBAN DISTRICT.—"The district, being of a rural nature, is mainly supplied by privies and ashpits. These are emptied at stated times and the contents removed. There are also a number of houses in the district which are provided with water-closets. These, with a few exceptions, are connected with cesspools, but the majority finally drain into the River Goyt."

BUCKLOW RURAL DISTRICT.—"The following figures are as close an estimate as possible in the absence of a house-register of the district. Privies, 1,210 ; pails, 654 ; cesspools, 1,000 ; water closets, 2,672. There are no waste-water or hand-flushed closets. Conversions of privies into water closets during year, 241.

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Mr. Metcalfe reports:—"249 privy closets were abolished and 241 water closets and eight pail closets substituted. Dustbins were provided to each house, in lieu of the 124 foul middens actually demolished. Many dry ashpits were also abolished and dustbins substituted.

"All the houses in Timperley, Dunham Massey and Northenden were visited and the closet and ashpit accommodation reported upon and the information tabulated.

"The work carried out under this heading during the year has been very heavy and undoubtedly establishes a record. The figures will probably be found to compare favourably with any similar Rural District in the country.

"*Scavenging.*—This remains as previously described. Movable ashbins were provided in all the cases of conversion.

Mr. Metcalfe reports:—"Dunham Massey, Timperley and Northenden. The scavenging in Northenden has been carried out by contract and in Dunham Massey and Timperley by the Council's own staff of workmen. The following is a return of the work done in each township during the year :—

	Dunham.	Timperley.	Northenden.
Houses scavenged	5368	11459	8367
Ashpits emptied	337	774	262
Dustbins emptied	5828	9257	6952
Pails emptied	440	1629	Nil
Loads removed	846	1063	476

"Special reports were made during the year on the scavenging and disposal of refuse in the above townships and another horse purchased and two more men employed with a view to increasing the efficiency of this department in Dunham Massey and Timperley. A weekly clearance of dustbins has been commenced.

"The report on Northenden was deferred for further consideration in 1914. The question of scavenging and disposal of refuse in this township is becoming a very serious matter; there are practically no suitable places for tipping the refuse and the provision of a destructor plant in the near future is inevitable. The present cost is unreasonable, as shown by the loads removed and compared with the other townships. It is important that this question be dealt with. A small area of Northen EtcHELLS was scavenged by the Northenden contractor and the work carried out by day work.

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“A report on the scavenging of Mobberley was submitted and a system of refuse removal will probably be commenced at an early date.”

CHESTER RURAL DISTRICT.—“The closet accommodation is satisfactory and sufficient. Several earth closets have been converted into water closets during the year. Scavenging is carried out by the Rural District Council as far as back passages are concerned in Great Boughton and Newton and privately. The refuse is removed weekly and fortnightly as occasion requires. There is no record of the number of midden privies, dry ashpits, pail closets, dustbins, cesspools, in your district.”

DISLEY RURAL DISTRICT.—“*Closet Accommodation*—Approximate number of houses with :

Privy Middens.	Pail Closets.	Water Closets.
399	83	200

“Number of houses converted from privy middens to water closets, 27. Number of houses converted from privy middens to pail closets, 1. Number of privies rebuilt, 1. Number of dustbins substituted for ashpits, 8. All the new houses have been supplied with water closets and galvanised iron dust bins.

“Seavenging is carried out by the District Council.

“The following is the approximate number of sanitary conveniences in the district :—

			How frequently Scavenged.
(a) Midden Privies	... 399	...	When necessary.
(b) Dry Ashpits	... 229	...	Do.
(c) Pail Closets	. 83	...	Fortnightly.
(d) Dustbins	... 105	...	Do.
(e) Cesspools	... —	...	—

More water closets are required.”

MACCLESFIELD RURAL DISTRICT.—“No provision is made for the removal of house refuse or the cleansing of earth closets, privies, cesspools, etc., such work being carried out privately. In three townships public tips have been provided during the year.”

MALPAS RURAL DISTRICT.—“Seavenging is not carried out by your authority. Most of the houses in the district have ashpit privies or midden privies. These are emptied when required on to the land, each householder being responsible for the disposal of his own refuse. The approximate number of conveniences is :—

(a) Midden Privies 130
(b) Dry Ashpits 40

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(c) Pail Closets	215
(d) Dustbins	0
(e) Cesspools	570

“The present system seems fairly adequate, but improvements are needed and midden privies ought to be abolished—pail closets and covered dustbins or ashbins substituted.”

“Closet accommodation is on the whole satisfactory. There are about 150 W.C.’s in Malpas. Pail closets are being introduced in different parts of the district when alterations are done. Sixteen improvements were made this year.”

NANTWICH RURAL DISTRICT.—“The removal of ashes and nightsoil is undertaken publicly for the townships of Audlem, Church Coppenhall, Haslington, Shavington, Willaston and parts of Wistaston. The village of Wybunbury would be improved by similar treatment.”

NORTHWICH RURAL DISTRICT.—“There are 12 townships in which the cleansing is done by contractors; the outlying cottages and farms using their own refuse for manure. Pails are removed weekly, dustbins and cesspools cleansed fortnightly and ashpits monthly. Water closets are being introduced wherever new property is erected and the water and sewers will allow of it; and as the provision of extended water supplies are under consideration it may be of some interest to note that during the year some £220 has been expended upon pails to replace worn and defective ones, also over £20 has been expended upon carbolic powder to disinfect these so called sanitary pails; roughly about £250 per annum is spent which would be a good set off against the interest and sinking fund of any schemes which would substitute ‘water carriage’ for the ‘pail’ system and make for true economy as well as for better sanitation.

The Inspector reports:—“*Scavenging Department.*—The altered form of contract providing for the fortnightly removal of house refuse appears to be much appreciated and with the weekly change of pails the system is as perfect as the system can be made to be under contract conditions. Two of the 12 townships cleansed under contract have the water carriage system and only removal of house refuse is provided for. This system is fast becoming general in most of the other townships’ as all the new houses built where there is the township’s water supply and sewers have the water closets in preference to the pail system, every inducement for such preference being given by the Council’s officials where practicable. 624 new pails and covers have been handed to the contractors to make up for defectives in the 12 townships and 9½ tons of carbolic powder used for pail disinfection during the year,

with the necessary supervision of the contractors cleansing upwards of 2,000 houses, shows clearly that it is the endeavour of the Council to keep the existing system in the best possible state of efficiency."

RUNCORN RURAL DISTRICT.—"Where extensive conversions of privies to water closets have been carried out, there is a system of sewage treatment interposed before the river or stream is reached, as at Helsby, &c. and in the New Moore Sewerage Scheme sewage treatment is being provided. The township of Moore at present contributes a degree of pollution to streams. Since my former report a scheme has been adopted and is at present in course of construction. Finally, I may assert that the total amount of pollution of streams in your district is quite trivial when compared with the aggregate pollution of rivers and streams from communities situated on, or contributing pollution to, these waters before they reach your district.

"It is impossible for me to give the actual figures as to closet accommodation, but I may state broadly that the policy of your Council has been—

- (a) To sanction existing privies, with or without ashpits, or to adopt the pail system in suitable cases, in all townships which have no public water supply nor sewerage scheme ; and
- (b) In townships where a public water supply exists and where also a sewerage scheme is provided, to gradually, or rapidly abolish the old privy system and adopt the 'water carriage' system of sewerage instead.

"For the last three years considerable activity in this regard has been manifest ; thus in 1911, 60 privies were converted to water closets and 15 new water closets provided in lieu of common privies, making 75 water closets in all ; and in 1912, 77 privies were converted to water closets and 40 new water closets provided in lieu of common privies, making 117 water closets in all ; in 1913, 97 privies were converted to water closets and 50 new water closets were provided in lieu of common privies, making 147 water closets in all, or a total of 339 water closets hitherto provided during the past three years, under the Housing and Town Planning Act, 1909. Thirty common privies were abolished in 1913.

"There is no systematic arrangement applicable to the whole district, for either house refuse, or for cleansing of closets, ashpits or cesspools. In Stockton Heath, this work is carried out by a contractor ; in Weston and Weston Point, when the conversion of privies is sufficiently advanced, the township itself now undertakes

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these duties, having negotiated a contract for them; and Halton has carried out a similar scheme, for a portion of the parish. When closet refuse can be taken away from ashpit refuse, this should be done in all cases. The general arrangements for the rest of the district might, with advantage, be considered and revised by your Council, as I feel convinced that considerable improvement might result from your deliberations."

TARVIN RURAL DISTRICT.—"House to house scavenging is not carried out by your authority. House refuse such as ashes is carted away by farmers for repairing their gateways and the scavenging of closets is done by the occupier, the contents being used or buried in the gardens. The roads are regularly swept clean, especially the main roads through the villages, these being chiefly made of tar-mac. Approximately there are about—

1700 Midden privies.

1200 Dry ashpits.

950 Pail closets (emptied weekly).

No record of dustbins.

780 Cesspools.

"There are too many midden privies in your district. These are being condemned and the pail closet system introduced whenever opportunity offers; about 100 have been converted this year."

WIRRAL RURAL DISTRICT.—"Newer residences have water closets and in many instances their own sewage purification installations. Closets draining to cesspools are common and the older cottages, far from any sewer, have privy middens, the contents of which are utilised for manurial purposes. The substitution of water closets for the old privy middens is going on slowly. Of the 541 cottages inspected under the housing inspection regulations, 183 had water closets, 76 pail receptacles and 263 privy middens, while 19 were found without proper closet accommodation or sharing with others. In eight of the townships the removal of house refuse is undertaken by contractors, who are required to remove it at short intervals. The Council do not empty cesspools but make the tenants fulfil this duty, with the result that the work is badly done and where the sanitary rate is exacted they feel that they have a grievance. A sanitary survey of the township of Ness, which has 451 persons in 108 houses, shewed that the emptying of ashpits when left to private individuals is done in a perfunctory fashion and a representation to this effect was made to the District Council and conveyed to the Parish Council. The rubbish tips are on agricultural land far enough away from houses to obviate direct nuisance, but occasional complaints are received of paper being blown about from these disposal sites."

Table shewing approximate number of various kinds of sanitary conveniences (exclusive of fresh and waste-water closets) in the several districts.

	Midden Privies.	Pail Closets.	Dry Ashpits.	Dustbins.	Cess-pools.	Scavenging done by.
MUNICIPAL BOROUGHS—						
Congleton	320	2454	12	2300	4	Council.
Crewe	251	2884	2605	7417	—	"
Dukinfield	779	484	62	2064	8	"
Hyde	133	98	1299	2362	16	"
Macclesfield	950	About 20	Practically none.	5000	About 12	"
Stalybridge	746	176	359	2173		"
OTHER URBAN DISTRICTS—						
Alderley Edge... ..	85	8	125	430	2	"
Alsager	315	22	30	630	30	Contract.
Altrincham	1746	19	1159	1217	—	Council.
Ashton-upon-Mersey	381	—	340	863	—	"
Higher Bebington	14	6	138	352	7	Contract.
Lower Bebington	10	—	456	2193	2	Council.
Bollington	400	12	450	223	9	Council.
Bowdon	77	10	128	459	5	Council.
Bredbury & Romiley	545	145	336	1017	11	"
Bromborough	47	—	62	279	6	"
Buglawton	267	40	13	36	4	"
Cheadle & Gatley	567	5	415	1505	—	"
Compstall	70	62	70	7	9	Contract & Occupiers.
Ellesmere Port & Whitby	94	1	176	1980	—	Contract.
Hale	174	25	378	1398	4	Council.
Handforth	120	—	12	30	4	Occupiers.
Hazel Grove & Bramhall	1198	6	695	260	45	Council & Occupiers.
Hollingworth	218	108	168	28	3	Council & Occupiers.
Hoole	34	4	56	1186	7	Council.
Hoylake & West Kirby	10	—	202	2977	1	"
Knutsford	83	147	260	800	—	"
Lymm	760	30	400	90	50	"
Marple	696	114	196	777	20	"
Middlewich	0	534	526	269	428	Council.
Mottram	200	170	83	35	17	Contract.
Nantwich	180	1108	440	688	—	Council.
Neston & Parkgate	352	—	200	375	39	"
Northwich	—	1543	1376	1579	262	Contract.
Runcorn	16	5	25	4000	5	Council.
Sale	1000	50	1650	130	—	Council.
Sandbach	—	432	794	221	539	"
Tarporley	Very few.	50	120	—	Ab't 200	Occupiers.
Wilmslow	765	12	388	300	—	"
Winsford	1074	517	351	623	3	Contract.
Yeardsley-cum-Whaley	324	17	40	3	89	Occupiers.
RURAL DISTRICTS—						
Bucklow	1210	650	700	1175	1600	[Contract. Council & Occupiers.]
Chester		No.	available.			
Congleton	Not known.	224	Not known.	290	—	Contract.
Disley	399	83	229	105	—	Council.
Macclesfield	2950	320	150	140	600	Occupiers.
Malpas	130	215	40	—	570	Council.
Nantwich	180	1108	440	688	—	Contract & Council.
Northwich	Not known.	2500	700	8000	550	Contract.
Runcorn			No records	kept.		Contract & Occupiers.
Tarvin	1700	950	1200	No record.	780	Contract.
Tintwistle	176	36	21	44	14	Occupiers.
Wirral	366	272	430	785	369	Council & Contract.

Section XII.—Housing.

It is no easy matter to say anything new on this well-worn subject. In a number of areas Local Authorities have had their attention drawn to the inadequate provision of houses for the workman earning low wages—say 17/- to 25/- a week—but upon investigation they have usually discovered that in carrying out a scheme for supplying the deficiency some charge on the rates would be involved. Working people of this class cannot afford to pay a greater rent than 3/- or 3/6 a week and no decent house of the type required can be built so as to let at this rental, unless the rates are called in aid.

The true solution of the question appears to be the raising of wages, which in addition to enabling the workman to secure a decent home would probably also aid in raising the hygienic and social standard of that home. There is a good deal of controversy as to whether a workman's house should have two or three bedrooms. I believe the three bed-roomed house to be the one most in demand in this part of the country. There is very little, if any, shortage of two bed-roomed houses, that being the usual type built many years ago. To perpetuate the two bed-roomed type is to make no advance on existing accommodation or type of dwellings. Even if the three bedrooms be not required at first for a newly married couple, the day is almost sure to arrive when it will be required. The temptation to take in lodgers and overcrowd can be prevented by adequate inspection.

It is only during the last few years that architects have given serious attention to the designing of cheap workmen's cottages, but we are gradually getting nearer to the solution of the problem and it seems reasonable to hope now that, unless strikes or similar dislocations force up prices, the three bedroomed cottage with bath and water closet (where water supply and sewerage facilities are available) will be built for £150 or slightly less. Decent cottages with a piece of garden will secure a return to the Local Authority if not in cash at least in health, temperance and the best attributes of humanity.

The housing (inspection of district) regulations are being efficiently carried out by the great majority of Local Authorities and not only are the sores being laid bare, but the necessary remedies are being effectively applied. In some few areas the annual number of inspections is not so great as it should be and I am recommending the application of the spur in the case of a few of the Local Authorities concerned.

Table giving statistics of housing inspections, &c., in the several districts of the County during 1913.

	Houses within limits of rental of Section 14 Act of 1909.	No. of such houses in respect of which notice was served.	No. of such houses closed after notice.	No. of such houses inspected under Section 17 during 1913.
MUNICIPAL BOROUGH—				
Congleton ...	2493	7	—	76
Crewe ...	9147	39	—	116
Dukinfield ...	4419	83	—	534
Hyde ...	7455	299	—	184
Macclesfield ...	5500	714	—	1006
Salybridge ...	5968	116	—	27
OTHER URBAN DISTRICTS—				
Alderley Edge ...	275	—	—	35
Alsager ...	350	—	—	17
Altrincham ...	—	14	1	14
Ashton-upon-Mersey ...	1010	78	—	92
Higher Bebington ...	193	28	—	46
Lower Bebington ...	1739	110	—	132
Bollington ...	1114	128	—	496
Bowdon ...	200	—	—	83
Bredbury & Romiley ...	1308	—	1	247
Bromborough ...	260	0	1	17
Buglawton ...	295	10	—	33
Cheadle & Gatley ...	1361	—	—	68
Compstall ...	—	—	—	12
Ellesmere Port & Whitby ...	421	122	—	122
Hale ...	800	47	—	586
Handforth ...	143	—	—	—
Hazel Grove & Bramhall ...	1404	56	—	716
Hollingworth ...	669	—	—	40
Hoole ...	545	90	—	290
Hoylake & West Kirby ...	860	148	3	148
Knutsford ...	730	45	—	56
Lymm ...	700	112	1	391
Marple ...	1100	—	—	40
Middlewich ...	950	11	—	30
Mottram ...	730	—	—	32
Nantwich ...	1296	—	—	150
Neston & Parkgate ...	677	102	2	104
Northwich ...	3560	72	—	126
Runcorn ...	—	No figures	in report.	—
Sale ...	1900	58	—	200
Sandbach ...	1187	5	—	68
Tarporley ...	356	22	—	140
Wilmslow ...	1282	—	—	95
Winsford ...	2200	178	—	224
Yeardsley-cum-Whaley ...	310	—	—	—
RURAL DISTRICTS—				
Bucklow ...	2992	112	—	173
Chester ...	1580	96	—	134
Congleton ...	2270	6	5	414
Disley ...	595	—	—	118
Macclesfield ...	750	230	—	898
Malpas ...	871	35	—	46
Nantwich ...	650	231	6	727
Northwich ...	4343	79	—	354
Runcorn ...	5600	78	—	400
Tarvin ...	1750	40	11	85
Tintwistle ...	440	25	1	30
Wirral ...	2238	541	—	541

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I quote the reports of the District Medical Officers of Health on this very important matter.

CONGLETON BOROUGH.—“The following is a list of what was effected in the year:—

Number of inspections made	...	...	...	76
Number of dwelling houses which on inspection were considered so dangerous to health as to be unfit for human habitation	...	..	...	10
Number of representations made to the Local Authority with a view to making closing orders	...	...	...	0
Number of closing orders made...	...	...	...	0
Number of dwelling houses the defects in which were remedied without making closing orders	...	...	...	49
Number of houses in process of being made habitable	...	...	...	10
Number of houses demolished	...	...	...	2
Number leaving to be dealt with	...	...	...	15

“Owing to the shortage of houses fit for habitation, which was drawn attention to in last year’s report and which continues unabated, there is overcrowding to a very considerable extent. Seven cases were dealt with and remedied, but there were many more with regard to which it was impossible to deal in any way short of turning the occupants into the street, and it was not thought desirable to resort to such an extreme measure so long as there is any hope at all of something being done in the near future.

Number of new houses built during 1913	...	...	...	10
Number of dwelling houses inspected under s. 17 of Act of 1909	...	...	...	76
Number of such houses considered unfit for habitation	..	...	...	10
Number of representations made to Local Authority	...	...	...	0
Number of closing orders made by Local Authority	...	...	...	0
Number of houses where defects remedied without closing orders being made	...	...	...	49
Number of houses where defects remedied after closing orders made	...	...	...	0

(Except houses closed in 1912.)

Estimated or ascertained number of houses within limits of rent in s. 14 of Act of 1909	...	...	...	2496
Number of such houses in respect of which notice was served during 1913	...	...	...	7
Number of such houses closed after notice	...	...	...	0
Number of such houses where Local Authority has executed necessary repairs, etc.	...	...	...	0
Approximate number of back-to-back houses in district	...	...	...	12
Number of cellar dwellings in district	...	...	...	0

CREWE MUNICIPAL BOROUGH.—“The Assistant Overseer (Mr. A. Maywhort) has kindly allowed me to obtain from the rate books the following information with regard to dwelling-houses, as recorded on June 30th, 1913 :—

Houses.	Number Occupied.	Number Empty.	Total No. of Houses.
Rated at £16 and under ...	8875	283	9158
Rated over £16	1232	23	1255
Total	10107	306	10413

“This classification on rateable value has been followed to afford information called for under the Housing and Town Planning Act.

“The following figures denote the percentage of empty houses to total houses on the rate books on June 30th each year :—

Average for 16 years (1895-1911)	3.14
Percentage in 1912	4.5
Percentage in 1913	2.9

“The Borough Surveyor (Mr. George Eaton-Shore) has been good enough to give me the following figures as to plans passed and habitation certificates granted :—

	Plans.	Habitation Certificates.
Average Yearly No. 1891-1900 ...	263	268 (3 years only.)
” ” ” 1901-1910 ...	148	141
Number in 1911	33	28
” ” 1912	19	16
” ” 1913	13	13

“The number of plans submitted and habitation certificates granted are the lowest yet recorded.

“The paving of five back passages has been completed during the year.

“There are 10,413 dwelling houses in the borough. Of these 9,158 are within the limit of rent applicable to the district under Section 14 of the Act, as seen in a previous table. The number of dwelling houses inspected during the year, under and for the purpose of Section 17 of the Act of 1909, was 116. The following tables shew the action taken with regard to this number.

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TABLE I.

HOUSES UNFIT FOR HABITATION.

No. Inspected.	Representations to Local Authority.	Closing Orders made.	No. Remedied without Closing Orders being made.	No. put in fit state for habitation after closing.	No. Demolished.
2	2	1	1	—	1*

* Demolished voluntarily by Owner.

TABLE II.

No. of Houses.		No. in good condition.	No. for which Notices Served.		No. remedied.	No. being remedied.	No. Nothing done.
			Informal	Statutory			
Inspected where Section 15 applied	} 59	20	14	25	19	16	4
Inspected where Section 17 applied	} 55	3	45	7*	10	35	7
Totals ...	114	23	59	32	29	51	11

* Notices under Section 94, Public Health Act, 1875.

“In carrying out these inspections much valuable information was collected with reference to the housing conditions in the borough, of which the following abstract will be useful and instructive.

RENTALS PAID:

Per Week.	3/3	3/4	3/6	3/8	3/9	3/10	4/-	4/6	5/-	5/6	6/3	6/9	7/-	7/6	8/6	Total
No.	3	9	31	1	5	2	1	15	7	10	5	15	5	6	1	116

51 houses had 2 bedrooms.

38 houses had 3 bedrooms.

27 houses had 3 bedrooms and a bath.

66 houses had fireplace in front and middle bedroom.

14 houses had fireplace in front and back bedroom.

36 houses had fireplace in front bedroom only.

All were “through” houses.

All had a window in each room.
 60 houses had damp proof courses.
 56 houses had no damp proof course evident.
 45 houses showed evidence of dampness.
 73 houses had water closets.
 43 houses had pail closets.
 100 houses had dustbins.
 16 houses had ashpits.
 106 houses had separate yards.
 10 houses had one joint yard.
 32 yards were paved.
 84 yards were part paved.
 73 houses abutted upon paved passages.
 43 houses abutted upon unpaved passages.
 All drain inlets were trapped with suitable gullies.

"In 17 houses water was discovered on the concrete under the wooden floors of the front sitting rooms, varying in depth from two to six inches. It was evident that adequate subsoil drainage had not been carried out before the houses were erected and this was confirmed when the suggested remedy was applied. The building bye-law which deals with the drainage of sites reads as follows :—

'Every person who shall erect a new building shall cause the subsoil of the site of such building to be effectually drained by means of suitable earthenware field pipes, properly laid to suitable outfall, whenever the dampness of the site renders such a precaution necessary.'

"It will be noted that the last clause in this bye-law leaves the question of subsoil drainage an optional one to be determined according to circumstances. In a district where the prevailing geological stratum encountered is heavy clay with practically no percolation of surface water in wet weather and where the gradients of the land are such as to limit the natural drainage, it would be advisable to make the subsoil drainage of building sites compulsory, at least, in so far as dwelling-houses are concerned. If this were done, the subsequent failure or short life of the damp-proof course would not result in so much absorption of moisture into walls as is possible at present. One of the objects aimed at in concreting the site under another bye-law is defeated unless a damp subsoil is drained. Added protection against dampness might also be sought by the use of cavity walls in all new dwelling houses. One is fully aware that to make this possible entails revision of some bye-laws and increased cost in

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building, the former is a matter of administrative procedure and the latter would be more than compensated for by the enhanced value of the premises from a health standpoint.

“The pointing of exterior walls, re-plastering of internal walls and ceilings, repairs to roofs, floors and the re-paving of yards up to the 150 square feet required under the bye-laws for new property and enforced under the Public Health Amendment Act, 1907, in old property, together with the general cleansing to walls, floors, etc., effected, have all contributed to improve the houses dealt with and make them healthier dwellings. It is a cause of considerable satisfaction for one to be able to report that all the property owners concerned have had the work required done, without it being necessary in any instance to take legal proceedings to enforce the orders and notices.

“It will be noted that in June, 1913, there were 306 empty houses in the town, of which only 23 were over £16 a year rental. From information to hand since that date I conclude that at the beginning of 1914 there are still fewer empty houses of all classes in the borough. Rents have been increased for the better class of house, a clear indication of the scarcity which exists. What with the natural increase in the population and the increase through immigration, it is to be hoped that private enterprise will encourage more building, for, failing that, coupled with a continually increasing demand, the question of the sufficiency of the housing accommodation will call for the most careful attention of the Local Authority.

“Ten cases of overcrowding were found as result of complaints. An informal notice was complied with in each case. There are 65 back-to-back houses in the borough. Most of them are in blocks of four, with ample ground space around them. There are no cellar dwellings in the town.”

DUKINFIELD MUNICIPAL BOROUGH.—“The house accommodation, owing to the scarcity of new buildings in recent years, is not sufficient. Much of the worst property has been demolished or remains unoccupied and very few houses have been built to replace them. The majority of the people in the town belong to the working class and from 1906 to 1911 excellent cottage houses were built, fitted with modern sanitary arrangements and conveniences and with plenty of air space. The number of plans submitted and passed for new houses during the year 1913 has only been eight and five in 1912 and compares unfavourably with previous years, viz. :—30 in 1911, 40 in 1910, 50 in 1908, 61 in 1907, 61 in 1906 and 24 in 1905. In every case the drains are

thoroughly tested by the Surveyor and strict supervision is taken by him as regards structure and air space and fitness for habitation. No action has been taken under the "Housing of the Working Classes Act, 1900," as there are no common lodging-houses in the district, but much work has been done under the Town Planning Act, for details of which see Inspector's Report appended.

"There are 10 more inhabited houses than 1911, a total which is made up as follows:—seven less in the Central, eight more in the East and nine more in the West.

"If we compare this with the years from 1901 we find:—

				No. of Houses.		Total.
				Inhabited.	Empty.	
1901 ...	...	...	4226	261	4487
1902 ...	...	...	4234	197	4457
1903 ...	...	...	4339	137	4476
1904 ...	...	...	4330	179	4509
1905 ...	...	...	4342	191	4533
1906 ...	...	...	4464	126	4590
1907 ...	...	...	4513	76	4589
1908 ...	...	...	4594	80	4674
1909 ...	...	...	4592	84	4676
1910 ...	...	...	4599	88	4687
1911 ...	...	...	4655	60	4715
1912 ...	...	...	4680	82	4762
1913 ..	...	...	4690	67	4757

"So that although the total increase of houses since 1901 is only 270, many of the older houses having been closed and demolished—the total number of inhabited houses has increased by 464.

"The average inhabitants per house occupied was only 4.19 in Census 1911, compared with 4.48 in 1901. A few cases of overcrowding due to insufficient house accommodation have been reported and dealt with during the year. We have a complete list of four-roomed houses, where eight and upwards are living and the Inspector is very assiduous in tactfully altering matters where practicable.

"As families grow up it follows that more sleeping accommodation is required. It is not so much a question of cubic space as of morals and occupiers complain that they are unable to obtain houses with three bedrooms at a reasonable rent, so they have to remain where they are. The worst feature of this difficulty is that it appears likely to continue. Eight new houses

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only were built in the year 1913 and five in the year 1912 and few, if any, houses are being erected which will meet the needs of these people.

“We have a list of back-to-back houses and the worst class of property is kept under careful and periodical inspection and improvements and alterations are insisted upon being done when necessary. Overcrowding is carefully watched and the condition of the poorer and neglected children reported upon to the Inspector of the Prevention of Cruelty to Children Society.

Number of new houses built during 1913	...	...	8
Number of dwelling-houses inspected under S. 17 Act of 1909	...	..	534
Number of such houses considered unfit for habitation	...		0
Number of representations made to Local Authority	...		534
Number of closing orders made by Local Authority	...		0
Number of houses where defects remedied <i>without</i> closing orders being made.	119 completed and 116 in process of completion		
Number of houses where defects remedied <i>after</i> closing orders made	...	...	0
Estimated or ascertained number of houses within limits of rent in S. 14 of Act of 1909	...	...	4419
Number of such houses in respect of which notice was served during 1913	...	...	83
Number of such houses closed after notice	...	...	0
Number of such houses where Local Authority has executed necessary repairs, &c.	...	...	0
Approximate number of back-to-back houses in district.			108
Approximate number of cellar dwellings in district	...		0

“During the year 235 houses were specially inspected under the Housing (Town Planning) Act, 1909, and in no instance was a house found to be incapable of being rendered fit for human habitation. No less than 119 houses were so improved during the year as to be considered in all respects reasonably fit for human habitation and in several instances the owners have, on invitation, attended before the Committee and by mutual agreement arranged to carry out the necessary alterations.”

HYDE MUNICIPAL BOROUGH.—“The following tabular statement shows the number of houses inspected, notices served and the alterations and improvements made during the year:—

Number of houses inspected within meaning of section 15	184
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Number of Closing Orders made by a Local Authority respecting 56 houses	17
Number of Houses where defects remedied without Closing Orders being made	116
Number of Houses where defects were remedied after Closing Orders were made	20
Number Demolished after Closing Orders made ...	18
Number Closed after Closing Orders made ...	6

The following is a detailed statement of defects found in houses inspected and in which action was taken under provisions of the Housing and Town Planning Act.

25, Cheapside and house behind, two back-to-back houses have been converted to one house, with through ventilation. Single house in yard behind has been demolished.

1 and 2, Hallbottom Place.—Single houses without through ventilation. These have been demolished.

4 to 10, Grafton Street.—Single houses without through ventilation upstairs and two closets for the four houses. Two additional closets have been built and through ventilation provided by means of windows upstairs.

11—13, Elizabeth Street and 157—163, George Street.—Four closets to six houses and open ashpit. Two additional closets have been provided, the ashpit abolished, and ashbins provided.

124 to 128, George Street and 21—23, Catherine Street.—Three closets to five houses and open ashpit. Ashpit has been abolished, two additional closets and ashbins provided.

51—55, Lewis Street and 37—41, Mottram Road.—Open ashpit has been abolished and ashbins supplied.

230—234, Market Street.—Two closets to three houses. An additional closet has been built.

255—257, Market Street.—Two privies have been converted to water closets and connected to sewer.

4, Edward Street, has been closed.

1—3, Frances Street and 2—8, Alfred Street.—Four closets to six houses and large open ashpit. Two additional closets have been built and ashpit abolished and bins provided.

2—8, Milk Street.—Four houses have been demolished.

2—14, Alma Street —Seven houses have been demolished.

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13—19, Alfred Street.—Four houses have been demolished.

21—23, Raglan Street.—Two houses have been demolished.

90—96, Manchester Road and 3—9, Cooper Street.—Four closets to eight houses, large open ashpit and yard unpaved. Four additional closets have been provided, ashpit abolished, bins supplied and the yard paved.

2, Kenyon Court.—This house has been added to part of 70, Ridling Lane; an additional closet has been provided and uncovered ashpit abolished and ashbins provided.

129, Back Lane.—Ventilation has been provided, but there is still an open ashpit, which should be done away with.

26—28, Catherine Street and 1—2, Washington Court.—Four back-to-back houses have been converted to two houses with through ventilation.

52—54, Grafton Street and 1—2 North Court.—Four back-to-back houses without through ventilation. These have been converted to two houses with through ventilation.

165—169, George Street and 12—16, Catherine Street.—Three additional closets have been built, open ashpit has been demolished and ashbins provided.

14—18, Oldham Street and 8—14, Croft Street.—Three additional closets have been built, open ashpit abolished and ashbins supplied.

5—7, Norfolk Street and 10—14, Reynold Street.—One additional closet has been supplied, open ashpit abolished and ashbins provided.

19, Meadow Street and 3, Back Meadow Street.—Back-to-back houses have been converted to one house with through ventilation ”

STALYBRIDGE MUNICIPAL BOROUGH.—“ It is only to be expected that in an old town like ours there will be many dwellings which through unsatisfactory situation and surroundings, defective and improper construction, or neglect of reasonable repairs and cleanliness, have in course of time become very unsuitable homes for human beings. In some parts of the town the natural conformation of the land in the way of sudden depressions and elevations has contributed to the erection of dwellings which, judged according to modern requirements in sanitation, must be considered most unsatisfactory and it is no easy matter to determine what is the best course of action to adopt in order to improve such dwellings.”

“During the year many dwellings have been under observation and of them 27 were carefully inspected and reported upon, ten of them being represented as unfit for habitation and 17 of them as requiring various alterations and repairs to render them reasonably fit for human habitation. Besides these 116 dwellings were inspected and notices under the Public Health Act were served for various repairs and alterations.”

Number of new houses built during 1913 ...	...	3
Number of dwelling-houses inspected under S. 17 Act of 1909 ...	...	27
Number of such houses considered unfit for habitation		10
Number of representations made to Local Authority...		44
Number of closing orders made by Local Authority ...		10
Number of houses where defects remedied <i>without</i> closing orders being made. Work in progress at 14 houses.		
Number of houses where defects remedied <i>after</i> closing orders made. Houses closed.		
Estimated or ascertained number of houses within limits of rent in S. 14 of Act of 1909 ...	...	5968
Number of such houses in respect of which notice was served during 1913 ...	...	116
Number of such houses closed after notice...	...	0
Number of such houses where Local Authority has executed necessary repairs, &c. ...	...	0
Approximate number of back-to-back houses in district		410
Approximate number of cellar dwellings in district ...		0

ALDERLEY EDGE URBAN DISTRICT.—“Three new houses were built during 1913. Two cases of overcrowding came under notice, and the condition was stopped. The number of dwelling houses inspected under S. 17, Act of 1909—35. None of them were considered unfit for habitation. No defects of a serious character were found, and no representations made to the Local Authority with a view to the making of closing orders. The number of houses where defects remedied without closing orders being made—35. The estimated or ascertained number of houses within limits of rent, in Section 14 of Act 1909 is 275. No formal notices were necessary in regard to such houses. Approximate number of back-to-back houses in the District, two. There are no cellar dwellings in the district.

“I am informed that no representation has been made to the Council upon the housing accommodation in the district, and in the course of the execution of my work in the District as Medical Officer, no representations as to any lack of accommodation have been made to me.”

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ALSAGER URBAN DISTRICT.—“The Committee deputed to work the Housing Act have visited and inspected the houses in the district, and given instructions for action to be taken when necessary.

“Number of new houses built during 1913, three. Number of dwelling houses inspected, 17. Number of houses considered unfit for habitation, three. Number of closing orders made by Local Authority, three. Number of houses where defects were remedied without closing orders being made, five. Number of houses where defects were remedied after closing orders made, one. Estimated number of houses within limits of rent in S. 14, of Act 1909, 350. Back-to-back houses, 0. Cellar dwellings, 0.”

ALTRINCHAM URBAN DISTRICT.—“The inspection of the district, under the (Inspection of District) Regulations, 1910, has been carried out under my direction by the surveyor's department. The total number of dwelling-houses inspected to date, under section 15 of the Act, is 1,068. Of the 254 defects outstanding at the end of last year, 179 have since been remedied. During the year 415 houses have been inspected and defects reported at 217 houses. At 120 houses the defects have been remedied. The general character of the defects observed consists of—damaged flooring, defective yard paving, broken plaster on walls, no through ventilation and minor structural defects, as well as the necessity for a large amount of internal decoration of walls and ceilings.

“A scheme has been prepared by the surveyor for dealing with the requirements at the rear of Nos. 157 to 167, Manchester Road and Nos. 16, 17 and 18, Dale Square, which has been approved by the Council and is now awaiting the signatures of the owners interested, in accordance with the agreement arrived at. The owners have notified the Council that they are getting tenders for the work required.

“During the year, the number of houses inspected under section 17 of the Act was 14, which were found unfit for human habitation. A closing order has been made in one case. Notice of intention to make closing orders has been served upon the owners of the remaining 13 houses and an appeal against the order has since been made by one of the owners, with respect to two houses. [At the date of writing this report this appeal had been dismissed by the L. G. B.]

“The Council are proceeding with the erection of dwelling-houses under the Housing Acts and there are at present in occupation nine five-roomed cottages, which let at a rental of

6/6 per week ; eight four-roomed cottages at 5/6 per week ; 22 four-roomed cottages at 4/9 per week ; 24 two-roomed cottage flats at 3/6 per week and four two-roomed cottage flats at 3/- per week. There are in course of erection 15 cottages of five rooms, three of which are bedrooms. The planning of the cottages has had special consideration and allowance has been made for abundant open space and ventilation."

ASHTON-UPON-MERSEY URBAN DISTRICT.—"I am still of the opinion that there is a sufficiency of good houses for the working classes in the district and no case for the Council to proceed under the Housing of the Working Classes Act. Eleven closing orders have been made by the Council on my representation and in most cases it is anticipated that satisfactory alterations will be carried out by the owners to enable the Council to determine the orders.

"Under the Housing (Inspection of District) Regulations, 1910, 92 houses have been inspected during the year, making 385 in all. The general character of the matters requiring attention were as follows :—

Insanitary closet accommodation	...	147
Defective gullies and drains	...	42
No free circulation of air	...	11
Dampness of walls	...	17
Insanitary yards...	...	59
Defective rain water pipes	...	9
Defective roofs	...	2
Defective waste pipes	...	23
To cleanse houses	...	19
Repairing ashpits	...	10

Forty statutory notices have been served for the remedying of the above defects and in all cases but seven they have been complied with ; these are now in hand."

HIGHER BEBINGTON URBAN DISTRICT.—"Under the Housing and Town Planning Act, 1909, the work done is shewn in the following statement :—

Number of new houses built during 1913	...	1
Number of dwelling houses inspected under Section 17, Act of 1909	...	46
Number of houses considered unfit for habitation		0
Number of representations made to Local Authority		0
Number of closing orders made by Local Authority		0
Number of houses where defects remedied without closing orders being made	...	18 and 10 work in progress

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Number of houses where defects remedied after closing orders made	0
Estimated or ascertained number of houses within limits of rent in Section 14, of Act of 1909 ..	193
Number of such houses in respect of which notice was served during 1913	28
Number of such houses closed after notice	0
Number of such houses where Local Authority has executed necessary repairs, etc.	0
Approximate number of back-to-back houses in district...	0
Approximate number of cellar-dwellings in district	0

“There are no empty houses in the district and although there are plenty of building sites available, no houses are in process of erection. Overcrowding was found in three instances, and the persons concerned were advised to move to larger dwellings. The following extracts from the 1911 census returns may be of interest :—

“Of a total of 357 families or separate occupiers enumerated at the 1911 census, 354 were private families and of these

				(With an aggregate population of)
2	were enumerated in tenements of 1 room	...	4	
8	“ “ 2 rooms	...	18	
29	“ “ 3 “	...	115	
101	“ “ 4 “	...	462	
64	“ “ 5 “	...	296	
30	“ “ 6 “	...	165	
31	“ “ 7 “	...	151	
39	“ “ 8 “	...	191	
26	“ “ 9 “	...	132	
24	“ “ 10 and upwards	...	143	

There were six tenements with more than two occupants per room, with an aggregate population of 51, giving a proportion of 3 per cent. to the population in private families.”

LOWER BEBINGTON URBAN DISTRICT.—“The problem of housing as it affects the working-classes has been considered by the Council, who have appointed a Sub-Committee to enquire what steps should be taken to deal with the deficiency in cottage dwellings especially, in the New Ferry Ward, as it appears that private enterprise will not move rapidly enough to cope with the needs of the district. Even in the older areas where the poorer dwellings are crowded together the air space and surroundings are of such a character that nothing comparable with the slums of the larger towns can

be found. The outcome of the deliberations on the housing question was that the Surveyor was authorised to prepare a scheme for submission to the Council for a number of working-class dwellings. In April, 1913, through the courtesy of the Medical Officer of Health for Worcestershire, I had an opportunity of inspecting the Broadway building scheme and the details of the work done there were laid before the Housing Sub-Committee. Inspection and remedying of defects under the Housing Regulations have been vigorously carried on throughout the year and in company with the Inspector I have examined 132 houses and made representations in connection therewith to the Council :--

Number of dwelling-houses inspected under			
Section 17, Act of 1909...	...	...	132
Number of such houses considered unfit for			
habitation ... ..	...	...	0
Number of representations made to Local			
Authority ... ..	...	...	110
Number of closing orders made by Local Authority			0
Number of houses where defects remedied without			
closing orders being made ... ..	...	...	116
Number of houses with work in progress ...			40
Number of houses where defects remedied after			
closing orders made ... ..	...	...	0
Estimated or ascertained number of houses within			
the limits of rent in Section 14, Act of 1909			1739
Number of such houses in respect of which notice			
was served during 1913... ..	...	...	110
Number of such houses where local authority has			
executed necessary repairs ... ..	...	...	0
Approximate number of back-to-back houses ...			2
Number of cellar dwellings ... ..	...	...	0

“The defects found consisted of dampness, deficient ventilation, broken tile floors, walls covered with several dirty papers, dirty houses, sink waste pipes too short, etc. There is said to be a disposition on the part of property owners to raise the rents of cottages where repairs have to be done under the provisions of the 1909 Act in order to recoup themselves for the outlay incurred in rendering the cottages habitable in every respect and these increased rentals are out of all proportion to the expenditure, but it is obvious that in a district where an empty cottage is never seen and where the demand for houses is great, that the rent charged will exceed the value of the housing accommodation provided. Some of the housing inspections were conducted in the model village of Port Sunlight and one could not help concluding that not only were the houses of a type which should be

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imitated, but that the tenants were also exemplary from the public health standpoint. Every bedroom window was found widely open and the surrounding areas of the cottages left nothing to be desired.

“The distribution of the population in relation to the number of rooms in the dwelling houses is shewn in the subjoined table :—

“Of a total of 2,301 families or separate occupiers enumerated at the 1911 census, 2,387 were private families and of these

					Aggregate Population.
7	were enumerated in tenements of one room	...			9
30	“ “ “ “ two rooms	...			98
116	“ “ “ “ three “	...			488
823	“ “ “ “ four “	...			3902
577	“ “ “ “ five “	..			2929
321	“ “ “ “ six “	...			1646
211	“ “ “ “ seven “	...			1128
69	“ “ “ “ eight “	...			359
57	“ “ “ “ nine “	...			297
76	“ “ “ “ ten „ & upwards				430

“The tenements which had more than two occupants per room numbered 74, with an aggregate population of 702, giving a proportion of 6.2 per cent. to the population in private families.

“The Surveyor states that 148 new houses were erected in 1913, viz.:—

Houses built in Port Sunlight	...	64
“ “ “ New Ferry ...	...	2
“ “ “ Lower Bebington	...	82
		— —
Total		148
		— —

“Seven old houses in New Ferry were demolished for the purpose of building a Picture Hall.”

BOLLINGTON URBAN DISTRICT.—“A paragraph in your Medical Officer's Report for 1911 to the effect that at the present time there seems to be a scarcity of houses and a demand for new ones has been the subject of correspondence between the Council and the Local Government Board. The latter body has written asking to be informed of what steps the Council are taking in the matter. The position at the present time is, however, on a different footing from that which obtained in 1911. Owing to a tide of emigration

which set in in 1912 and continued in 1913, about 30 houses—chiefly those of the working classes—were rendered vacant. Latterly, however, the number has been somewhat reduced, but at the close of the year there were still about 25 of such houses unoccupied. Of this number about one quarter were houses with three bedrooms, the remainder having only two bedrooms. For the present, therefore, the housing accommodation would seem to be sufficient. That the matter has had the serious attention of the Council is evident from the fact that the Housing Committee has been for some time negotiating for land and has authority from the Council to obtain estimates for the erection of twelve houses, each to contain at least three bedrooms. At the end of the year, however, the Committee had not been able to come to terms with any of the landowners they had approached on the subject.

“The following are the particulars required by the Local Government Board under Article V. of the Housing (Inspection of District) Regulations, 1910.

Number of new houses built during 1913 ...	...	7
Number of dwelling houses inspected under S. 17 Act, 1909		496
Number of such houses considered unfit for habitation...		5
Number of representations made to Local Authority ...		0
Number of closing orders made by Local Authority ...		0
Number of houses where defects remedied without closing orders being made. Work in hand but not completed at end of year ...	...	5
Number of houses where defects remedied after closing orders made ...	...	0
Estimated or ascertained number of houses within limits of rent in S. 14 of Act, 1909 ...	...	1114
Number of such houses in respect of which notice was served during 1913 ...	...	128
Number of such houses closed after notice...	...	0
Number of such houses where Local Authority has executed necessary repairs, &c. ...	...	0
Approximate number of back-to-back houses in district...		6
Approximate number of cellar dwellings in district ...		0

“Almost all the older houses are built of stone or stone and rubble. These have not a damp-proof course and consequently, in many cases, shew signs of dampness. A few of the houses have been built against the hill sides with the earth at the back or at the back and sides coming right up against the walls. In such cases dampness is inevitable. For some time now these have engaged the attention of the Health Committee, who have brought pressure to bear on the owners to have the earth removed. In

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some cases this has been completed, whilst in others the work is in progress. Cheshire View, Kerridge, is an instance of this class of property. Here is a row of houses with the backs to earth. From the rear of two of these the earth has been removed, greatly to the advantage of the inmates. This work is being continued so as to clear the rear of the whole line of building. The greater number of this older class of house contain only two bedrooms. More recently built houses are of brick alone, or of brick with stone frontages. These of course have a dampproof course and a layer of concrete over the earth. They generally contain three rooms downstairs and three bedrooms upstairs. Bathrooms are not yet general."

BREDBURY AND ROMILEY URBAN DISTRICT.—"The house accommodation has been increased during 1913 by the erection of 16 new houses and these are all occupied. Plans for a larger number have been passed as may be seen in the Inspector's Report. In the middle of 1913 there were 1,467 occupied and 12 unoccupied houses in Bredbury ; 765 occupied and 20 unoccupied houses in Romiley ; 2,232 occupied and 32 unoccupied houses in the whole district. In all the newer property there is sufficient air-space about the houses, but in some of the older property this has not been so well provided for nor maintained. One finds on systematic inspection that this is often the fault of the tenants, who encroach on the space provided by erecting hen houses, rabbit hutches, coalsheds, etc. A watch has been kept on this practice and a check put to it when discovered, as it is not conducive to health.

"The Sanitary Inspector was appointed in 1912 to make the inspections under these regulations under the supervision of the Medical Officer of Health. In September, 1913, an additional Inspector was appointed to expedite this work and he took up his duties towards the latter end of the year. 247 inspections have been made and the particulars entered in the register, which is laid before the Sanitary Committee at its monthly meetings. One house was found to be unfit for human habitation. This was an outstanding case mentioned in my report for 1911 and it has been dealt with this year. It was an old cottage called Bardsley Hall, Greave Croft, Romiley, the owner of which wished to demolish it, but could not get rid of the tenant. A magistrates' order was eventually obtained and the man was ejected and taken to the Union and the owner has now written promising to demolish the cottage forthwith."

BROMBOROUGH URBAN DISTRICT.—"There are no empty cottages and nearly all the working-class dwellings are modern and well constructed. Any which do not come within this category

have been kept under constant supervision during the year and their most marked defects have been remedied. Many artisans and labourers employed in the works live in other districts. It is estimated that there are 260 houses under £16 rental, but the erection of a large number of artisans' dwellings is in contemplation by employers of labour. Two new houses were built in 1913, none in 1912 and nine in 1911.

Number of dwelling-houses inspected under S. 17, Act of 1909	...	...	...	...	17
Number of such houses considered unfit for habitation ..				(empty for a long period)	1
Number of representations made to Local Authority	...				17
Number of closing orders made by Local Authority	...				0
Number of houses where defects remedied without closing orders being made	...	...	...	(proceeding)	16
Number of houses where defects remedied after closing orders made	...	...	...		0
Estimated or ascertained number of houses within the limits of rent in S. 14, Act of 1909	...				260
Number of such houses in respect of which notice was served during 1913	...	...	...		0
Number of such houses closed after notice	...				1

"The following statement from the 1911 Census return may be of interest :—

Of a total of 404 families or separate occupiers enumerated at the 1911 Census 399 were private families and of these

			(With an aggregate population of)	
2	were enumerated in tenements of	1 room	...	3
2	"	2 rooms	...	9
31	"	3 "	...	116
119	"	4 "	...	528
141	"	5 "	...	697
27	"	6 "	...	144
13	"	7 "	..	64
14	"	8 "	...	62
7	"	9 "	...	29
43	"	10 and upwards	...	309

There were eight tenements with more than two occupants per room, with an aggregate population of 72, giving a proportion per cent. to the population in private families of 3.7."

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BUGLAWTON URBAN DISTRICT.—“The following is a list of what was effected in the year:—

Number of inspections made	...	...	...	33
Number of dwelling houses, which, on inspection, were considered to be in a state so dangerous to health as to be unfit for human habitation	...	...	...	2
Number of representations made to Local Authority with a view to making closing orders	...	...	...	0
Number of dwelling-houses, the defects in which were remedied without making closing orders	...	...	...	9
Number of houses in process of being made habitable	...	...	...	5
Number of houses demolished	...	...	...	0
Leaving to be dealt with	...	...	...	19

“The general characters of the defects found were defective drainage, dampness from defective spouting, untrapped drains, defective or unsuitable sanitary accommodation, unpaved yards or yards in bad condition, the last being a common defect and sometimes the only one. Owing to a strike in the building trade, it was impossible, for several months, to get masons or brick-setters to do any work and this accounts for so few of the defects being remedied.

“There are 295 houses in Buglawton within the limits of rental under Section 14 of the Act 1909 and 33 of these were inspected in 1913.

“The matter of the shortage of houses in Congleton has been under the special consideration of the Town Council several times, but no decision has been come to. The Local Government Board has repeatedly communicated with them on the subject during the last two years and, in consequence of a very recent communication, I understand the Council intend discussing the matter next Monday.”

CHEADLE AND GATLEY URBAN DISTRICT.—“In October, 1911, your Council appointed your Medical Officer of Health and your Sanitary Inspector to make inspections under the Act. Inspections have been made in the Cheadle and Cheadle Hulme Wards. Owing to your Inspector having received instructions to devote most of his time to the Town Planning Scheme and to the scattered nature of the district in which inspections have been made, not many inspections were made. During the current year we hope to cover a large area, as we have now done all the scattered and outlying portions of the district.

“Number of houses inspected during the year, 68. No houses were considered to be in a state so dangerous or injurious to health as to be unfit for human habitation. No representations were made to the authority with a view to making closing orders. No closing orders were made. Ten dwelling-houses had defects remedied without making closing orders. No dwelling-houses had defects made good after closing orders had been made. The number of houses in the district within the limit of rent in Section 14 of the Act is 1,361. The number of houses and premises in respect of which notices were served during 1913 :—Statutory notices, 2 ; informal notices, 9. The Local Authority in no case had to execute any necessary repairs. The number of back-to-back houses in the district is six. There are no cellar dwellings. The houses inspected were on the whole clean, commodious, well-lighted and surrounded by plenty of air space.

“During 1912 your Council had conferences with several of the neighbouring authorities, and a portion of the north-eastern boundary (Adswold district) was taken first, consisting of 471 acres and a population of 54. In 1913 application was made and sanction given by the Local Government Board to prepare a scheme for this area. An owners’ meeting has been held in respect to area No. 2 (4,232 acres), which includes practically the remaining portion of the district, with exceptions of excluded areas. Application for sanction to prepare a scheme for this area has not yet been submitted to the Local Government Board.

“Eighty-five new houses were built and occupied in the district during 1913, as compared with 77 in 1912 and 112 in 1911. They have all complied with your Council’s bye-laws. They are mostly semi-detached villas in Cheadle Hulme South Ward.

“Owing to remarks which I have repeatedly made in my other Annual Reports as to the want of suitable cottages for the working classes in the Cheadle Hulme Wards, in 1911 the Local Government Board made inquiries as to what your Council were doing in the matter. Your Council appointed a Sub-Committee to go into the matter and report. They reported that they did not think that there was any need at present of more cottages. I had hoped to have made a full report on this subject during the year, but was prevented. I hope to do so during the current year.

Number of new houses built during 1913	85
Number of dwelling-houses inspected under S. 17 Act			
of 1909	68

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Number of such houses considered unfit for habitation ...	0
Number of representations made to Local Authority ...	0
Number of closing orders made by Local Authority ...	0
Number of houses where defects remedied without closing orders being made	10
Number of houses where defects remedied after closing orders made	
Estimated or ascertained number of houses within limits of rent in S. 14 of Act of 1909	1361
Number of such houses in respect of which notice was served during 1913	
Number of such houses closed after notice	
Number of such houses where Local Authority has executed necessary repairs, &c.	
Approximate number of back-to-back houses in district...	6
Approximate number of cellar dwellings in district ...	0

“Sanction has been obtained from Local Government Board to prepare town-planning schemes for two areas in this district.”

COMPSTALL URBAN DISTRICT.—“The houses are well built and in most cases have sufficient accommodation. Back yards are spacious and kept clean. Open spaces are numerous. The blocks of houses are well apart and not congested. Number of houses erected, one.

Number of new houses built during 1913...	1
Number of dwelling-houses inspected under S. 17 Act of 1909	12
Number of such houses considered unfit for habitation	0
Number of representations made to Local Authority ...	0
Number of closing orders made by Local Authority ...	0
Number of houses where defects remedied without closing orders being made	0
Number of houses where defects remedied after closing orders made	0
Estimated or ascertained number of houses within limits of rent in S. 14 of Act of 1909	0
Number of such houses in respect of which notice was served during 1913	0
Number of such houses closed after notice...	0
Number of such houses where Local Authority has executed necessary repairs, etc.	0
Number of back-to-back houses in district ...	15
Number of cellar dwellings in district	1

ELLESMERE PORT AND WHITBY URBAN DISTRICT.—“Statistics from the 1911 Census shew that the district is overcrowded and the extent of the difficulty can be gleaned from the following figures :—

“Of a total of 1,963 families or separate occupiers enumerated at the 1911 Census, 1,889 were private families, and of these

				With an aggregate population of
12 were enumerated in tenements of 1 room	...	26		
142 ” ” 2 rooms	...	510		
164 ” ” 3 ”	...	759		
444 ” ” 4 ”	...	2240		
865 ” ” 5 ”	...	5100		
156 ” ” 6 ”	...	855		
64 ” ” 7 ”	...	358		
20 ” ” 8 ”	...	117		
5 ” ” 9 ”	...	31		
21 ” ” 10 ” & upwards	132			

“The aggregate population in one and two roomed houses numbered 536; while 7,340 was the population of the four and five-roomed houses. There were 135 tenements with more than two occupants per room, with a population of 1,167, giving a proportion of 11.5 per cent. to the population in private families.

“107 houses have been inspected by me in company with the Inspector and the owners have been called upon to make good the defects noted which, put shortly, were want of cleanliness, often due to long occupation without periodical papering and painting, dry rot in floors, dampness, unsatisfactory back yards. unauthorised erections upon the air space. Work is proceeding in the direction of rectifying these matters, but in my opinion the overcrowded state of the cottages has a more detrimental effect upon the occupiers than many of the structural defects which the owners have to remedy. As capacity to pay rent is intimately associated with the question of wages, the Inspector has ascertained for me that the following table represents the average weekly payments for the labour of workmen :—

				£	s.	d.
Ironworkers :—						
	Rollers	...	...	5	0	0
	Galvanisers	...	...	1	15	0
	Labourers	...	...	1	4	0
Cement Works :—						
	Process Men	...	...	1	14	0
	Labourers	1	6	0
Flour Mills :—						
	Warehousemen	1	8	0
	Millers	1	18	0
	Mechanics	1	14	0

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Shropshire Union Railways and Canal Co. :—

Dock Labourers	1	4	0
Warehousemen	1	3	0
Mechanics...	...	...	1	12	0

Dye Works :—

Process Men	...	...	...	£1	6	0
Labourers	...	...	...	1	6	0
Fitters	...	...	...	1	12	0

Wages in Building Trades per hour in—

	1905.	1912.	1913.
Bricklayers	9d.	9d.	9½d.
Masons	9d.	9d.	9d.
Joiners	8½d.	8½d.	8½d.
Plumbers	8½d.	8½d.	9d.
Plasterers	9½d.	9½d.	9d.
Painters	7½d.	7½d.	8¾d.

Labourers—

Bricklayers	...	5¾d.	5¾d.	6d. & 7d.
Masons	...	5½d.	5½d.	6d. & 7d.
Plasterers	...	5d. to 5¾d.	5d. to 5¾d.	—

“ The Council have considered the question of the advisability of building workmen’s dwellings as there seemed to be a failure of private enterprise in this direction, but no scheme was approved. At their deliberations they had before them the following draft financial statement prepared by the Health Committee and deferred the further consideration of the matter for six months.

SCHEME PROVIDING FOR THE ERECTION OF SIXTY HOUSES.

Draft Financial Statement.

	INCOME.	£	s.	d.
Rent of 60 Houses at 5/- per week	...	780	0	0
Deduct—Estimated voids and losses	...	30	0	0
		<u>£750</u>	<u>0</u>	<u>0</u>

EXPENDITURE.

Land—3 acres at £250—£750. Annual instalment of Principal and Interest on £750 for 80 years at 3½ per cent.	...	28	0	7
Buildings, Sewers, Architect, Clerk of Works, &c., £10,000. Annual instalment of Principal and Interest thereon for 60 years at 3½ per cent.	...	400	0	0
Roads, £900. Annual instalment of Principal and Interest thereon for 20 years at 3½ per cent.	...	63	6	0
Rates and Taxes	...	137	0	0
Insurance	...	7	10	0
Supervision and Collection of Rents	...	15	0	0
Repairs and Contingencies	...	65	0	0
		<u>715</u>	<u>16</u>	<u>7</u>
Estimated Surplus	...	34	3	5
		<u>£750</u>	<u>0</u>	<u>0</u>

“There is plenty of open space around the houses and the Council, in their preliminary town planning scheme, made provision for the maintenance of the amenity of the further development of the town.

“The number of inhabited houses at December 31st, 1913, was 2,249.

Number of dwelling-houses inspected under S. 17 Act of 1909	...	...	...	...	122
Number of such houses considered unfit for habitation	...				—
Number of representations made to Local Authority	...				107
Number of closing orders made by Local Authority	...				—
Number of houses where defects remedied without closing orders being made	...	...	...	...	107
				(proceeding)	
Number of houses where defects remedied after closing orders made	...	...	...	...	—
Estimated or ascertained in number of houses within the limits of rent S. 14, Act of 1909	...			...	421
Number of such houses in respect of which notice was served during 1911	...	...	...	...	122
Number of such houses closed after notice	...			...	—

HALE URBAN DISTRICT.—“Though the district is still developing as a whole, the main development is taking place on the ‘Moss,’ where artisans’ dwellings continue to be built. These readily let, but the internal needs of the district are to my mind amply met. There is no overcrowding in the district and the houses are built with the maximum amount of air space around that can be enacted. New houses in the course of erection are liberally supervised at each successive stage. The general cleanliness round houses is good. The Housing and Town Planning Act, 1909, has, during the year, been carried out and a report made to you each month.”

HANDFORTH URBAN DISTRICT.—“No new houses for the working classes have been erected. The present houses for these classes are fairly good and no cases of overcrowding have come under my notice. There are a number of back-to-back houses and these are not insanitary for such houses.”

HAZEL GROVE AND BRAMHALL URBAN DISTRICT.—“During the year the following work has been done in accordance with Article V. of Housing (Inspection of Districts) Regulations 1910, in

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regard to the inspection of dwelling-houses under section 17 (1) of the Housing and Town Planning Act, 1909.

Number of dwelling-houses inspected (under sec. 17, 1909)	716
Number of dwelling-houses considered unfit for habitation	0
Number of representations made to Local Authority ...	0
Number of closing orders made by Local Authority ...	0
Number where defects remedied without closing orders being made	29
Number where defects remedied after closing orders ...	0
Estimated number of houses within limits of rent in sec. 14, Act 1909	1404
Number of such houses in respect of which notice was served in 1913	56
Number closed after notice	0
Number where Local Authority has executed necessary repairs... ..	0
Number of back-to-back houses and cellar dwellings ...	0

“The housing accommodation of the district is ample and in good condition. No cases of overcrowding have come under notice. The number of new cottages erected by private owners during the year and suitable for occupation by the working classes is 10.

“Authority was granted by the Local Government Board on 8th August, 1913, to the Council to prepare a scheme and in accordance with this scheme they have scheduled 1728.315 acres, the Northern portion containing 428.226 acres, situate in the north Ward and the Southern portions containing 1300.089 acres in the South and East Wards and are now engaged in formulating their scheme.”

HOLLINGWORTH URBAN DISTRICT.—“There are now only 28 back-to-back houses and notices regarding 20 of these have been issued to the landlords concerned. As a result, 12 notices have been complied with, and the remainder are being attended to, and nearing completion. There were 40 dwelling-houses inspected during 1913, 20 of which appeared to be satisfactory, except for a few minor defects, which were pointed out and remedied. A letter was received from the Local Government Board, in December last, stating that the number of houses inspected under the Housing and Town Planning Act, 1909, was very small, having regard to the number of inhabited houses in

the district. I should like to point out that the Urban District Council anticipated this Act by ordering a thorough and exhaustive inspection of every block of property in the Urban District before the Housing and Town Planning Act came into force. This inspection occupied three years and the Council now have in their possession a minute record of the recommendation and sanitary conditions of every house in the district. So far, our energies have been entirely concentrated on inspections of the worst and most difficult property in the district, and I am glad to say that we have, at the present time, almost completed this particular type and the inspection of the remainder of the houses in the district will now be a comparatively easy matter."

HOOLE URBAN DISTRICT.—"The erection of new houses is thoroughly supervised by the Council's Consulting Surveyor. The question of whether there is adequate house accommodation for the working classes is receiving the consideration of the Council, but no action has as yet been taken under the Housing of the Working Classes Act. At the census there were 1,224 inhabited houses, which with the population of the Workhouse included, gives an average of 4·8 persons per house, or 4·3 excluding the Workhouse. Four new houses were completed during the year and two more have been in the course of erection, all being carried out in accordance with plans approved by the Council.

"In connection with the housing inspection under the Housing and Town Planning Act, 1909, the Sanitary Inspector made inspection of 175 dwelling-houses. In 96 houses everything was found in order and the premises in good condition. Of the remaining 79 houses, informal notices were served for defects.

"In no case was any house found injurious to health, nor were closing orders necessary to be served. All the defects remaining in hand are being dealt with by the owners."

HOYLAKES AND WEST KIRBY URBAN DISTRICT.—"There does not appear to be any deficiency of cottages for the working classes and the great majority of dwellings are modern and well built, with plenty of cubic space internally and free circulation of air around. The latter requisite for healthy habitations is enforced by a rigid application of the bye-laws for preventing the erection of any structures upon the air space allocated to each dwelling, except such as are legally permissible. Most of the houses are in good repair and apart from minor defects habitable in every respect. There is no place within my

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experience, including model villages, where the standard of comfort in cottage habitations is as high as it is in Hoylake and West Kirby.

HOUSING INSPECTIONS, 1913.

Number of dwelling-houses inspected under S. 17, Act of 1909	...	...	...	...	148
Number of such houses considered unfit for habitation					5
Number of representations made to Local Authority...					148
Number of closing orders made by Local Authority					0
Number of houses where defects remedied without closing orders being made	...	...	...	...	133
					(proceeding)
Number of houses where defects remedied after closing order made	...	...	...	...	0
Estimated or ascertained number of houses within limits of rent in Sec. 14 of Act of 1909	...				860
Number of such houses in respect of which notice was served during 1913	...	...	...	...	148
Number of such houses closed after notice				...	3
Number of such houses where Local Authority has executed necessary repairs, &c.	...	...	...	...	0
Approximate number of back-to-back houses in the district	...	...	...	...	6
Approximate number of cellar-dwellings in the district					0

“With regard to the five cottages which were considered unfit for habitation, closure and demolition is gradually taking place as the tenants find accommodation elsewhere.

“The following extract from the Census return may be of interest. Of a total of 2,887 families or separate occupiers enumerated at the 1911 Census, 2,828 were private families and of these

					Aggregate Population.
10 were enumerated in tenements of one room	...				13
64	”	”	”	two rooms	115
150	”	”	”	three ”	608
288	”	”	”	four ”	1242
545	”	”	”	five ”	2645
276	”	”	”	six ”	1311
374	”	”	”	seven ”	1623
322	”	”	”	eight ”	1408
268	”	”	”	nine ”	1289
535	”	”	”	ten rooms & upwards	2985

“The tenements with more than two occupants per room numbered 43, with an aggregate population of 372. The proportion per cent. to the population in private families was 2.8.

“Forty-five new sheds have been dealt with during 1913, 11 of which have been allowed to remain under agreement. The rest have been removed, excepting four exempt structures. Most of these sheds are erected in ignorance of the Bye-laws and if notices were posted up in the passages warning people not to erect any structure without first obtaining the sanction of the Council, the number of these erections would probably be considerably reduced. They are usually of a most dilapidated character and often erected over gullies and drains. It is satisfactory to be able to report that contraventions of the Building Bye-laws are not as frequent as they were.”

KNUTSFORD URBAN DISTRICT.—

“Number of houses inspected under Section 17 of Act of 1909					56
Number unfit for habitation	..	...	...	...	0
Number of representations	...	...	...	...	0
Number of closing orders	..	...	...	...	0
Number where defects were remedied without closing orders	...	..	...	..	53
Number remedied after closing orders	...	...	...	...	0

“General character of defects: Defective drains and paving, dampness, want of ventilation, insufficient or defective sanitary conveniences.

“There are 730 houses within limits of rent in Section 14 of Act. There are 14 back-to-back houses. There were no new houses built in 1913 (nor in 1912).

“The scheme for the ‘Princess Street area’ is blocked by one owner and application has been made to the Local Government Board for an arbitration. The Council is anxious to erect workmen’s dwellings, but it is difficult to obtain land. A great deal of time was spent by members of the Council in negotiations for a field of about four acres in Cross Town and especially by Mr. Marshall in surveying the same and arranging (on paper) for laying it out, sewerage, &c., as well as on details of construction of houses proposed to be built. When all was practically complete, the offer was withdrawn and an offer made of another

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field about the same size. This the Council is now endeavouring to secure. Unfortunately much of Mr. Marshall's work on the former site is thrown away."

LYMM URBAN DISTRICT.—"In 1913 ten new houses were built in the district. Systematic house to house inspection has been continued. I am still of opinion that there is a shortage of cottages with three bedrooms. There were three cases of overcrowding discovered and dealt with. I should like to see water closets substituted for privies and privy middens more completely and more quickly. Also in all new property there should be a definite relation between floor area and height of rooms and this especially in sleeping rooms. Bath rooms should be provided, if not one for each cottage at least one for so many. Times could be fixed for its use amongst the users and the landlord might make a small charge per week to each tenant which would recoup him or even show a profit on his expenditure."

MARPLE URBAN DISTRICT.—"Under the Housing Act, 1909, 40 houses were inspected and 16 defects found were remedied. No further action was necessary.

Number of new houses built during 1913	...	...	11
Number of dwelling-houses inspected under s. 17 Act of 1909	...	...	40
Number of such houses considered unfit for habitation	...	...	0
Number of representations made to Local Authority	...	...	0
Number of closing orders made by Local Authority	...	...	0
Number of houses where defects remedied without closing orders being made	...	...	16
Number of houses where defects remedied after closing orders made	...	...	0
Estimated or ascertained number of houses within limits of rent in s. 14 of Act of 1909	..	...
Number of such houses in respect of which notice was served during 1913	...	...	0
Number of such houses closed after notice	...	...	0
Number of such houses where Local Authority has executed necessary repairs, &c.	...	...	0
Approximate number of back-to-back houses in district	...	...	46
Approximate number of cellar dwellings in district	...	...	0

MIDDLEWICH URBAN DISTRICT.—“House accommodation is good and sufficient. The houses of the working classes are good structurally except in a few isolated instances where the defects are being remedied.

Number of new houses built during 1913	...	...	1
Number of dwelling-houses inspected under s. 17 Act of 1909	...	...	30
Number of such houses considered unfit for habitation	...	...	0
Number of representations made to Local Authority	...	...	30
Number of closing orders made by Local Authority	...	...	0
Number of houses where defects remedied without closing orders being made	...	...	20
Number of houses where defects remedied after closing orders made	...	...	0
Estimated or ascertained number of houses within limits of rent in s. 14 of Act 1909	...	...	950
Number of such houses in respect of which notice was served during 1913	...	...	11
Number of such houses closed after notice	...	...	0
Number of such houses where Local Authority has executed necessary repairs, &c.	...	...	0
Approximate number of back-to-back houses in district	...	...	0
Approximate number of cellar dwellings in district	...	...	0

MOTTRAM URBAN DISTRICT.—“The number of houses inspected under and for the purposes of Section 17 of the Act was 32. One house was considered unfit for human habitation, and closed by order of the Council. In 31 houses the defects were remedied without closing orders being made. The remaining house was re-constructed after closing orders made.

“The number of houses in the district within limits of rent in Section 14 of the Act of 1909 is 730. The Local Authority in no case had to execute any necessary repairs. The approximate number of back-to-back houses in the district is six, and five cellar dwellings. The chief defects found were:—Slopstone pipes too short, flagging bad, no trap to slopstone pipes, defective roof, windows not made to open. Six new houses have been built. There is still a dearth of cottage houses containing three bedrooms.”

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NANTWICH URBAN DISTRICT.—

“ Number of new houses built during 1913	5
Number of dwelling-houses inspected under s. 17 Act of 1909	150
Number of such houses considered unfit for habitation	...	10
Number of representations made to Local Authority	...	10
Number of closing orders made by Local Authority	...	10
Number of houses where defects remedied without closing orders being made	... ..	125
Number of houses where defects remedied after closing orders made	... ..	9
Estimated or ascertained number of houses within limits of rent in s. 14 of Act of 1909	... ..	1296
Number of such houses in respect of which notice was served during 1913	... ..	0
Number of such houses closed after notice	...	0
Number of such houses where Local Authority has executed necessary repairs, etc.	... ..	0
Approximate number of back-to-back houses in district	...	4
Approximate number of cellar dwellings in district	..	0

NESTON AND PARKGATE URBAN DISTRICT.—“Overcrowding exists in the working class dwellings and its radical treatment cannot be enforced until new cottages are available at low rentals. During the year there has not been an empty habitable cottage in the district and three houses for which demolition orders are in force still remain occupied by tenants, who if ejected would have no homes to go to. The Council feel strongly that the enforcement of demolition orders under present circumstances is out of the question and they are not prepared to build. Tension has been somewhat relieved by the action of the Neston Cottage Company, Ltd., which had purchased land last year in order to build ‘healthy houses for the working classes.’ This Company has eight cottages going up and they propose to erect from 28 to 30 dwellings on the three acres of land which they have acquired. Each of the eight cottages for which plans have been passed by the Council is to have three bedrooms, a kitchen, living room and a scullery. Baths are provided in the sculleries. The rentals are to be of such an amount that only a nominal rate of interest will be payable upon the outlay of the promoters, who are business men actuated by a desire to help the district, but wish to secure themselves against actual loss on the undertaking. The

Company submitted for the Council's approval a plan of a cottage of what is known as the Arnold Mitchell type, but this plan was disapproved, as space was reduced to a minimum and it was contended that if this cottage should be adopted as a standard, it would give a fatal setback to the building of adequate cottages.

"Out of the 10 cottages built in Neston in 1913, only two are dwellings for the working classes and the same tendency to build large houses can be noted in previous years. The modern residence in this neighbourhood is built without any lodges or cottage accommodation, so that gardeners, motor drivers and other outdoor servants acquire dwellings in the villages. A bye-law requiring the erection of at least one four-roomed cottage by the builder of every residence assessed at over £80 or some similar figure would gradually help to diminish the present unsatisfactory conditions. State servants in Neston in the form of officials employed by the Post Office and over 21 years of age number 10 and yet the State does not own a single house in the place. I am informed that the Postmen's Organisation has approached the Postmaster General on the subject of State houses, but their requests have been rejected. A similar condition of affairs exists in connection with the railway companies. The Great Central Railway has 15 employees over 21 years of age living in Neston and only owns one house. The Joint Railway Company employs 13 adult males and owns two houses. The Urban District Council own two cottages and find employment for 16 workmen. It will be obvious that if the State, the Railway Companies and the District Council were to build cottages for their own employees the problem would be solved.

"A very large amount of work has been involved in the housing inspections, which have been carried out by me in conjunction with the Inspector and in several instances complete re-construction had to be undertaken to comply with the demand that habitable conditions should pertain.

Tabular statement of housing inspections in 1913:—

Number of dwelling-houses inspected under				
Section 17, Act of 1909...	...	...	...	104
Number of such houses considered unfit for				
habitation	...	...	...	4
Number of representations made to Local				
Authority	...	...	...	104
Number of closing orders made by Local				
Authority	...	...	...	2
Number of houses where defects remedied without				
closing orders being made	95
				(proceeding)

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Number of houses where defects remedied after closing orders made	0
Estimated or ascertained number of houses within the limits of rent in Section 14, Act of 1909				677
Number of such houses in respect of which notice was served during 1913...	...	...	...	102
Number of such houses closed after notice	...			2

“The general character of the defects found to exist in these houses may be stated to have been windows not made to open; dampness of walls; numerous filthy papers covering walls; rotten woodwork and floors; general dilapidation; conveniences insanitary and deficient in number; want of light and through ventilation; absence of sinks and water not laid on. In many instances the tenant's own conduct was responsible for the dirty and neglected condition of the dwelling and without going outside Neston I can bear out the statement of Eastern and African travellers that on entering houses ‘they have found their clothing covered with myriads of fleas, sometime ravenous and at others weak from long fasting.’”

COTTAGE RENTALS IN HOUSES EXAMINED—

Rent, including Rates and Water Charges.	Accommodation.
2/8 per week	Kitchen, small scullery and two small bedrooms, one midden privy for three houses.
3/- per week	Kitchen, shed for scullery, one bedroom divided by a partition into two parts, one w.c. for two houses and open ashpit.
4/6 per week	Kitchen, back kitchen, two bedrooms, midden privy for each house, one stand pipe in yard for four houses.
6/- per week	Parlour, kitchen, scullery, three good bedrooms, w.c. and ashpit, sink and water laid on.
6/6 per week	Parlour, kitchen, scullery, three bedrooms, bathroom, w.c. and sanitary bin, sink and water laid on.

“It ought to be mentioned that the general standard of comfort in the cottages has been distinctly raised since 1910.

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"Permission has been asked, from the Local Government Board, to prepare a town planning scheme for Neston and preliminary meetings have been held to determine what parts of the area should be included or excluded, as well as to ascertain the views of local landowners and interested persons. That the whole district is in a state of transition and development must be freely admitted, for out of a total acreage of 3,627 practically half has been in the market during the past six years, viz. :—1,786 acres and 804 acres have actually changed owners. The scheme propounded will link up the district with the plan of the neighbouring Rural Authority."

NORTHWICH URBAN DISTRICT.—"There has been a loss of eight cottages which are demolished—they include the six houses condemned as unfit for habitation last year. On the other hand some 60 new dwelling-houses have been erected of a type from 4/6 to 5/6 per week, all with modern conveniences and some with baths. Nine cases of overcrowding have been dealt with and seven cases of filthy premises depending upon the character of the tenants. There has been also some building within a mile of the district of many workmen's houses, but usually of the higher rented type. The pressure is not perhaps quite so acute as it was, but there is still great need for decent sanitary dwellings to replace many of the older and insanitary ones which exist.

"During the year under review 126 houses were inspected and 14 were found unfit for habitation. All were within limits of rent in Section 14 of Act of 1909, of which there are 3,560; no houses were closed by the Local Authority. There are no cellar dwellings in the district and about 130 back-to-back houses.

"The Local Government Board have held an inquiry regarding an application by the Local Authority for sanction to borrow £8,500 for the purchase of a site and the erection thereon of 48 dwellings for the working class. In spite of some strenuous opposition by a certain section of ratepayers on various grounds the site and erection of houses has been sanctioned. Several drafts of town planning have been attempted and conferences held with the adjoining authority, but no definite arrangements have so far been completed."

RUNCORN RURAL DISTRICT.—"Advantage was taken without compulsion by the authority, to clear away a number of cottages in a part of the town that had a very evil reputation for insanitary conditions. This deal had the effect of clearing away six front cottages and eighteen back-to-back real slum property,

and providing a school play-ground with an open area of 1,640 square yards; it is impossible to magnify the value of this open 'lung' to the locality affected, for we had during 1911 no fewer than 21 cases of enteric fever, within a short distance of this new playground, for although not open to the people, it has replaced some of the most insanitary and squalid property and should benefit the locality for all time. In other parts of the town, house improvers and sanitary reformers were not idle. English and Crescent Rows have been very much under the improvers touch during the year. All the cellar dwellings have been closed and fine closed back yards with modern conveniences have been added to the eighteen cottages constituting these two blocks of property, and making them very eligible cottages to live in. Several cottage properties in other parts of the town have been vastly improved by repairs that have brought them up to modern requirements. About midsummer the authority authorised me to make a special examination and report to them on several blocks of property that require attention. Since then some of the properties named have been repaired and altered to suit modern requirements; some houses have been pulled down and others are receiving attention at the hands of the Health Committee and no doubt will be finally dealt with as circumstances require. Mr. Wilding accompanied me on my rounds on this occasion.

"Building operations have been going on during the year, but not on a very extensive scale. According to some well-informed persons, there appears to be a good demand for houses still and it is not equal to the demand. The building prospect for 1914 is suggested that the supply is much brighter and may we hope that constant employment for all will follow in its wake and be the precursor of better times. Overcrowding is a great evil, but the difficulty is to find the proper remedy. I am afraid that this offence against decent living will still go on until the law is altered to make it a punishable offence on the first information, a sharper remedy should be found to improve the occasion; something more drastic than a mere notice to abate the evil."

SALE URBAN DISTRICT.—"1900 houses are affected by this Act and 200 of these dwelling houses have been inspected during the past twelve months. No house has been absolutely condemned. Defects in 76 houses were remedied, but without closing orders. The general character of the matters requiring attention was insanitary closet accommodation, defective drainage, insanitary yards, defective waste pipes, overcrowding, defective roofs."

SANDBACH URBAN DISTRICT.—"There is no doubt a great shortage of the working class cottage and the fact that the

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industries of the town and district are in such a flourishing condition has brought a large number of families into the town, making the shortage more keenly felt. The houses existing are in a good state of repair. Sanitary arrangements and water supply are satisfactory and there is plenty of air space behind the houses. There have been eight new houses built during the year. A further six are now in course of erection and one was closed in 1913.

“Number of new houses built during 1913	...	...	8
Number of dwelling houses inspected under s. 17 Act of 1909	...	...	68
Number of such houses considered unfit for habitation	...		0
Number of representations made to Local Authority	...		0
Number of closing orders made by Local Authority	...		0
Number of houses where defects remedied without closing orders being made	...	..	0
Number of houses where defects remedied after closing orders made	...	..	0
Estimated or ascertained number of houses within limits of rent in s. 14 of Act of 1909	...	...	1187
Number of such houses in respect of which notice was served during 1913	...	...	5
		(Preliminary notices)	
Number of such houses closed after notice	...	...	0
Number of such houses where Local Authority has executed necessary repairs, &c.	...	...	0
Approximate number of back-to-back houses in district	...		4
Approximate number of cellar dwellings in district	...		0

“The house-to-house inspection under the Housing (Inspection of District) Regulations, 1910, which was commenced in 1911, has been carried on during the year by the Inspector of Nuisances and the following are particulars of his inspections :—

Number of houses inspected	...	...	68
Number of inspections (including re-visits)	...	...	176
Number of Preliminary Notices served for remedy of minor defects	...	...	5

“The defects found have not been of a serious nature and no houses have been reported as dangerous or injurious to health. One house which was in a bad state of repair has been voluntarily closed.

"The inspection of the houses of the second list of streets approved by the Sanitary Committee is progressing favourably. Separate books are kept for this work and they embrace all the headings mentioned in articles 2 and 3 of the Regulations.

"The defects are mainly small property repairs and they are summarized at the end of the Inspector's monthly report to the Sanitary Committee."

TARPORLEY URBAN DISTRICT.—"There were no new houses built during the year.

Number of new houses built during 1913 ...	...	0
Number of dwelling-houses inspected under Section 17, Act of 1909 ...	...	140
Number of such houses considered unfit for habitation—		
3 very dirty, 1 cleaned, 2 in hand		
Number of representations made to Local Authority ...	...	50
Number of closing orders made by Local Authority ...	...	0
Number of houses where defects remedied without closing orders being made ...	...	21
Number of houses where defects remedied after closing orders made ...	...	0
Estimated or ascertained number of houses within limits of rent in Section 14 of Act of 1909 ...	...	356
Number of such houses in respect of which notice was served during 1913 ...	18 informal notices, 4 official	
Number of such houses closed after notice ...	...	0
Number of such houses where Local Authority has executed necessary repairs, &c. ...	...	0
Approximate number of back-to-back houses in district...	...	0
Approximate number of cellar dwellings in district ...	...	0

CLASSIFICATION OF DEFECTS FOUND IN INSPECTION UNDER HOUSING AND TOWN PLANNING ACT, 1909.

	Defects.	Remedied.		In hand.
		Closing Order.	Without.	
Water supply all sufficient, but some 300—400 yards away ...	22	...	...	22
Closet accommodation ...	64	...	20	44
Drainage ...	66	...	24	42
Condition as to light, free circulation of air, dampness and cleanliness ...	45	...	21	24
Paving of yard and outhouses ...	78	...	23	50
Arrangement for deposit of refuse, ashes, &c. ...	—	...	—	—
Existence of any room, etc., sub-section of Section 17 Housing and Town Planning Act, 1909 ...	—	...	—	—
Any defects in other matters which may tend to render house dangerous or injurious to health ...	—	...	—	—
Overcrowding ...	2 are being dealt with.			

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“There is a sufficiency of houses for the working-classes in your district.”

WILMSLOW URBAN DISTRICT.—“Four new cottages were built during 1913. The character of houses for the working-classes is satisfactory. No cases of overcrowding have come under notice. Bye-laws are in force relating to the construction of new houses. There are no back-to-back houses and no cellar dwellings. Ninety-five dwelling-houses were inspected under S. 17 Act of 1909. Nine were considered to be unfit for habitation. No representations were made to the Council. No closing orders were made. In forty cases defects were remedied without the making of closing orders.

“General character of defects found to exist —

- (1) Insanitary closets.
- (2) Defective paving in yard.
- (3) Insufficient ventilation in bedrooms and living rooms.”

WINSFORD URBAN DISTRICT.—Mr. Hickson’s report is as follows:—“During the year 224 houses have been inspected in detail by the Inspector and afterwards visited by Dr. Garstang, viz. : 36 in Station Road, two in Dierden Street, four in Crook Lane, 14 in Wharton Road, two in East Dudley Street, eight in Ledward Street, 32 in Princess Street and two in School Road, a total of 100 in Wharton. Also 31 in High Street, 13 in Weaver Street, 19 in Winnington Street, 19 in Gladstone Street, 17 in Dingle Lane, six in Chapel Street, 10 in Haigh Street, six in Latham Street, three in Delamere Street, a total of 124 in Over. The defects discovered at these inspections, after being carefully registered, have from time to time been the subject of Special Reports to the Health Committee and the Council, resulting in seven statutory notices being served (on one owner) and 200 informal notices, by way of personal negotiations with owners, or agents, as to executing the required improvements. At 133 houses the whole of the work has been completed as arranged for; at 12 houses the improvements are partly executed; at 52 houses the work is already arranged for, the remainder being still in progress of negotiation. The improvements actually carried out, as a result of these inspections, include among other defects remedied, the conversion of 125 privy-cesspools to water-closets, 101 new house drains, with gullies and all other requisites connected and proper gradients to sewers, 93 rear yards newly paved, making smooth impervious surfaces and properly graded to sewers and the fixing of 91 new slopstones, fitted with lead piping and other requisites, where none previously existed.

Dr. Garstang remarks:—"This is a good record of excellent work done and it would have been still better had not so large a part of Mr. Hickson's time been occupied in dealing with infectious disease.

" Number of houses inspected under Sec. 17	...	...	224
Number found unfit for habitation	...	...	0
Number of representations (for closing orders)	...	...	0
Number of closing orders	...	...	0
Number of houses remedied without closing orders	...	...	133
Number of houses remedied after closing order	...	...	0

"General character of defects found:—defective paving and drainage, unauthorised obstructive out-buildings, defective floors, damp walls, want of slopstones, defective and insanitary privies and ashpits.

"I have drawn the attention of an Inspector of the Local Government Board, who has visited the district, to the great value of the work thus done, as it bears upon the question of the conversion of privies. If we took steps to enforce the conversion wholesale (which has been suggested), we should not obtain such good results as we are actually getting, at the cost only of some delay, by dealing with individual cases, as they are inspected under the H.T.P. Act. Please refer to the illustration which I have had prepared to demonstrate and prove this. It shows the back view of a row of 10 cottages. Four, at the lower or left hand end, have been improved; the other six will follow. These latter show the old privy-cesspools (not midden-privies, because the joint ash-pit in the centre is dry), built in pairs at the extremity of the yard. A bare order to convert would probably have resulted in the erection of an inferior type of water-closet on the same site and nothing more. What has actually been obtained, by negotiation and persuasion, is the abolition of the old building, the site being added to the yard; the erection of a first class closet and wash-house, contiguous to the scullery; and general improvements (as required in each case) including paving and draining of yard and provision of trapped gully; provision of slopstone and waste-pipe; and general repairs to house. The system is now recognised and established; no statutory notices are required and the work is going steadily on, with a minimum of friction and as fast as the local builders can deal with it.

"The illustration should also be noted as showing the existence of plenty of open space in rear of the back-yards, adding

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largely to the air space which might be reasonably calculated as available for each house. The majority of cottages in this district are in this fortunate position.

“Twelve cases of over-crowding were found ; nine have been remedied, three are under observation.

“Twelve new houses were built during the year. Supervision over the construction of new houses is in the Surveyor's hands and as he is independent of the Health Department, he does not report to me and I have no information to give.”

BUCKLOW RURAL DISTRICT.—“The Inspector reports :—The work under the Housing, Town Planning, &c., Act was proceeded with and 173 houses inspected. Eight representations were made to the Council in respect of eight houses unfit for human habitation and closing orders issued. Defects were remedied without closing orders being made at 244 houses. The usual defects were bad floors and staircases, dampness, defective ceilings and plastering, dilapidated fireplaces, bad paving in yards and washhouses, old foul sinks, light and ventilation, windows too small and could not be opened, defective drainage, leaking untrapped, unventilated and insanitary privies. No cases of over-crowding were discovered but in a few cases it may be said to have been ‘a very near thing,’ even when calculated on the low common lodging house standard of 300 cubic feet per head. The food store is usually found to be ‘that very badly ventilated place under the stairs,’ or on the scullery shelves over the washboiler. The structural defects were dealt with by the service of notices upon the owners or agents under the Public Health Acts or by the issue of informal notices for matters not so dealt with or by meeting the owner or agent at the property and pointing out the defects to them. There was only one case where a house was occupied by more than one family ; it was a six-room cottage with two married couples, but there were no children.

“On several occasions the question of housing accommodation in the district was before the Health Committee, but for the want of definite information on the subject there was no decision come to and it was still under consideration at the close of the year.

“It was not found necessary to take legal proceedings against anyone with regard to matters coming under this department. This is very satisfactory considering the large amount of work carried out.

“An exhaustive formal enquiry is (at the time of writing) being carried out by the Health Committee, whereby the exact

present circumstances and future needs of each individual township will be ascertained. Circulars have been sent to Overseers, Chairmen of Parish Councils and Parish Meetings, &c. It is hoped to have the information summarised and published in the next Annual Report.

“This is a district, as often stated before, where building bye-laws have always been enforced and where supervision over construction has been close and continuous; especially in the matters of water-testing drains and so on.

The Surveyor Reports:—“During the year comparatively few new buildings have been erected. This condition of affairs is common in other surrounding districts. Eleven certificates of completion under the building bye-laws were granted for 21 houses which are now occupied. Footings and dampproof courses for 30 new buildings have been examined and found satisfactory. Twelve connections to main sewers have been inspected and found in order. All drains to new houses throughout the Council's District have been water-tested and the 50 sets thus inspected were found sound and water-tight.”

CHESTER RURAL DISTRICT—

“Number of new houses built during 1913 ...	...	41
Number of dwelling-houses inspected under Section 17 of Act of 1909 ...	...	134
Number of such houses considered unfit for habitation ...	...	0
Number of representations made to Local Authority ...	...	0
Number of closing orders made by Local Authority ...	...	0
Number of houses where defects remedied without closing orders being made ...	...	53
Number of houses where defects remedied after closing orders made ...	...	0
Estimated or ascertained number of houses within limits of rent in Section 14 of Act of 1909 ...	...	1580
Number of such houses in respect of which notice was served during 1913 ...	...	96
Number of such houses closed after notice ...	...	0
Number of such houses where Local Authority has executed necessary repairs, &c. ...	...	0
Approximate number of back-to-back houses in district	0
Approximate number of cellar dwellings in district	0

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CLASSIFICATION OF DEFECTS FOUND IN INSPECTION UNDER
HOUSING AND TOWN PLANNING ACT, 1909.

	Defects.	Remedied.		In hand.
		Closing Order.	Without.	
Water supply	0	—	—	—
Closet accommodation	18	—	13	5
Want of pails (conversion)	67	—	42	25
Drainage	75	—	35	40
Condition as to light, free circulation of air, dampness and cleanliness	20	—	16	4
Paving of yard and outhouses	6	—	3	3
Arrangement for deposit of refuse, ashes, &c.	0	—	0	0
Existence of any room, etc., sub-section 7 of Section 17 Housing and Town Planning Act, 1909	0	—	0	0
Any defects in other matters which may tend to render house dangerous or injurious to health	0	—	0	0
Overcrowding	3	—	3	—

“There is a sufficiency of houses for the working classes in your district.

“The most important alterations that have taken place are with regard to through ventilation, scores of existing windows being made to open and new windows made in the parishes of Great Saughall, Baekford, Little Stanney, Woodbank and Shotwick and closet accommodation has been much improved.”

CONGLETON RURAL DISTRICT. — “Thirty-eight houses were built this year. This year we have had the assistance of a temporary Inspector and I should advise the Council to employ him again until the whole of the district has been done. Last year I reported that 62 houses had been inspected, this year 414, but there are about 2,270 houses to be inspected, so there is plenty more work to be done. Six of these houses were not considered fit for habitation and were ordered to be closed. In five, this was done and in the other one proceedings are being taken. Six houses were found to be without proper closets and ten without proper drainage. We are short of houses at Astbury, Elworth and Holmes Chapel. I have found a few cases of overcrowding owing to large families in small houses, but have managed to overcome the difficulty by the older children sleeping at another house.

“Number of new houses built during 1913	38
Number of dwelling houses inspected under s. 17 Act of 1909	414
Number of such houses considered unfit for habitation	6
Number of representations made to Local Authority	22
Number of closing orders made by Local Authority	6

Number of houses where defects remedied without closing orders being made	...	...	...	3
Number of houses where defects remedied after closing orders being made	...	...	...	0
Estimated or ascertained number of houses within limits of rent in s. 14 of Act of 1909	...	...	...	2270
Number of such houses in respect of which notice was served during 1913	...	...	...	6
Number of such houses closed after notice...	...	...	...	5
Number of such houses where Local Authority has executed necessary repairs, &c.	...	...	...	0
Approximate number of back-to-back houses in district	...	...	...	0
Approximate number of cellar dwellings in district	...	...	...	0

DISLEY RURAL DISTRICT.—“There are 819 houses in the district. 118 houses were inspected. Nine houses were inspected under and for the purposes of Section 17 of the Act of 1909. The chief defects found were want of through ventilation. As most of these houses had recently had structural alterations to improve their condition, it was not considered advisable to recommend closure. In 36 houses defects were remedied without closing orders being made. The chief defects found were structural, dampness and insanitary privies. There are nine back-to-back houses in the district. There is a sufficiency of houses for the working classes. There was one case of overcrowding, which was remedied. Four new houses for the working classes were erected during the year.

“Number of new houses built during 1913	...	...	...	6
Number of dwelling-houses inspected under S. 17, Act of 1909	...	...	...	118
Number of such houses considered unfit for habitation	...	...	...	0
Number of representations made to Local Authority	...	...	...	0
Number of closing orders made by Local Authority	...	...	...	0
Number of houses where defects remedied without closing orders being made	...	...	...	36
Number of houses where defects remedied after closing orders made	...	...	...	0
Estimated or ascertained number of houses within limits of rent in s. 14 of Act of 1909	...	...	...	595
Number of such houses in respect of which notice was served during 1913	...	...	...	0
Number of such houses closed after notice	...	...	...	0
Number of such houses where Local Authority has executed necessary repairs, &c.	...	...	...	0
Approximate number of back-to-back houses in district	9
Approximate number of cellar dwellings in district	0”

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MACCLESFIELD RURAL DISTRICT.—“The work of inspecting the houses of the district for the purposes of Section 17 of the Housing and Town Planning Act, 1909, has been steadily carried on throughout the year, 898 such inspections having been made. No houses were considered unfit for human habitation and no closing orders were necessary. One case of overcrowding which was being dealt with in 1912 was abated by a member of the family emigrating and another case discovered at the end of this year where a family consisting of father, mother and seven children were found occupying two bedrooms is being remedied. During the year the plans for 23 new working class dwellings were submitted and approved and the work is now proceeding. In all such cases due supervision of the work of construction is maintained by the Surveyor.

“Number of new houses built during 1913 ...	...	36
Number of dwelling-houses inspected under s. 17 Act of 1909 ...	...	898
Number of such houses considered unfit for habitation ...	...	0
Number of representations made to Local Authority ...	...	0
Number of closing orders made by Local Authority ...	...	0
Number of houses where defects remedied without closing orders being made ...	...	278
Number of houses where defects remedied after closing orders made ...	...	0
Estimated or ascertained number of houses within limits of rent in s. 14 of Act of 1909 ...	...	750
Number of such houses in respect of which notice was served during 1913 ...	...	230
Number of such houses closed after notice ...	...	0
Number of such houses where Local Authority has executed necessary repairs, &c. ...	...	0
Approximate number of back-to-back houses in district ...	...	0
Approximate number of cellar dwellings in district ...	...	0

MALPAS RURAL DISTRICT.—“There were two more houses built this year than last.

Number of new houses built during 1913 ...	...	3
Number of dwelling-houses inspected under Section 17 of Act of 1909 ..	...	46
Number of such houses considered unfit for habitation ...	...	0
Number of representations made to Local Authority ...	...	0

Number of closing orders made by Local Authority ...	0
Number of houses where defects remedied <i>without</i> closing orders being made	29
Number of houses where defects remedied <i>after</i> closing orders made	0
Estimated or ascertained number of houses within limits of rent in Section 14 of Act of 1909	871
Number of such houses in respect of which notice was served during 1913	35
Number of such houses closed after notice	0
Number of such houses where Local Authority has executed necessary repairs, &c.	0
Approximate number of back-to-back houses in district...	0
Approximate number of cellar dwellings in district ...	0

CLASSIFICATION OF DEFECTS FOUND IN INSPECTION UNDER
HOUSING AND TOWN PLANNING ACT, 1909.

	Defects.	Remedied.		In hand.
		Closing Order.	Without.	
Water supply	—	—	—	—
Closet accommodation	16	—	16	—
Drainage	12	—	8	4
Condition as to light, free circulation of air, dampness and cleanliness ...	13	—	11	2
Paving of yard and outhouses ...	4	—	4	—
Arrangement for deposit of refuse, ashes, &c.	—	—	—	—
Existence of any room, &c., sub-section 7 of Section 17 Housing and Town Planning Act, 1909	—	—	—	—
Any defects in other matters which may tend to render house dangerous or injurious to health	20	—	16	4
Overcrowding	1	—	1	—
Defective Roofs	8	—	8	—

“Four houses were re-roofed and through ventilation made in ten houses. Thirty-eight of the inspected houses were in Malpas, three in Threapwood, two in Macefen, three in Wigland.”

NANTWICH RURAL DISTRICT.—“The work of inspecting the existing houses of the district and tabulating records of these inspections has been pursued systematically by the Inspector. Great improvements have been effected and there is prospect of still further improvement. The Inspector’s report gives details of his work. During the year the Council, feeling that there is need for increased accommodation for working people in some parts of the district, appointed a Committee to make enquiry as to the

HOUSING.

amount of accommodation required and the best means of supplying the same. This Committee drafted a letter, which I transcribe and which, I think, fairly puts the case in its financial aspects. This letter has been sent to the Clerks of the Parish Councils and all Chairmen of Parish Meetings. So far all the replies asked for have not come to hand and it is therefore too early to express a definite opinion as to the actual number of cottages required. It will be seen from a perusal of the letter that the loss per cottage, if cottages were let at 3/- per week, would be £2 per annum. For this sum the ratepayers would be buying the cottage in sixty years and would, I think, find it to be a profitable investment.

“Copy of letter *re* housing of the working classes sent to Parish Councils and Parish Meetings.

NANTWICH RURAL DISTRICT COUNCIL.

Nantwich,

Dear Sir,

23rd September, 1913.

RURAL HOUSING.

The above Council have had the question of the housing of the working classes in their district under consideration and have come to the conclusion that in many of the parishes in the Rural District there is a need for good cottages capable of being let at a reasonable rent.

They desire, however, before proceeding further, to ascertain the views of the several Parish Councils and Parish Meetings in their district on the question and I am to ask you to be good enough to let me know as early as possible whether in the opinion of your Parish Council (Meeting) there is a need for cottages in your particular parish and, if so, whether it is the wish of the parish that the District Council should take advantage of their powers to meet the need.

The District Council have power under Part III. of the Housing of the Working Classes Act, 1890, as extended by the Housing, Town Planning, &c., Act, 1909 and with the approval of the Local Government Board, to carry out housing schemes and to borrow money for the purpose of defraying their cost.

The money for the purchase of freehold land may be borrowed for a period of 80 years and for the cost of erection of buildings for a period of 60 years.

A Committee of the Council have reported that, from the information they have been able to obtain, the cottages most likely to meet the needs of the district would require to

comprise a large living room, scullery, &c, on the ground floor and three bedrooms upstairs and to be provided with the usual out offices and a pigstye.

These cottages could best be erected in pairs, on sites not exceeding a quarter of an acre in extent and would cost, approximately, £400 per pair, including purchase of site, provision of water supply and drainage and the necessary fencing.

The charges on a loan of £400 borrowed at the current rate of interest ($3\frac{1}{2}\%$) for a period of 60 years and repayable by equal half-yearly instalments of principal and interest combined would amount to £15 19s. 10d. per annum.

The annual charge would be slightly reduced if the loan for the site was taken up for the full period of 80 years allowed by law, but, as it is hoped the cost of the sites will be too small to make this desirable, the Committee considered it as well to base their figures on the 60 years' basis.

The repayment of loan and interest would work out at 3s. 1d. per week per cottage and, plus rates and some allowance for working expenses, would entail a rental of, say, 3s. 9d. per week per cottage.

It was considered that 3s. per week, including rates, would be the maximum rental that could be obtained in the rural parishes and therefore a deficiency of 9d. per week, or say £2 per annum, per cottage, would require to be met out of the rates of the parish in which the cottages were built, but, as soon as the loans were paid off, the cottages would become the property of the parish and a source of considerable income in comparison to the amount expended on them.

I am to add that the District Council fully endorse the findings of their Committee and will be glad to furnish any further information that they can in order that your Parish Council (Meeting) may be enabled to give the subject full consideration.

Yours truly,

H. G. ATKINSON,

Clerk to the Council."

"The different parts of the district vary much in their requirements. In some parts the landowners have made serious efforts to cope with the needs of their neighbourhood. It is invidious to mention names; but if landowners generally would only do as more than one landowner has already done in this

HOUSING.

district the problem of rural depopulation would be solved. In other parts of the district there has not been the serious effort that should be made to supply decent and commodious homes for the working classes. I notice that, generally speaking, the improvements are most apparent on the large estates and that in those parts of the district where the land is more divided up among comparatively small owners there is the least activity. As far as my own personal opinion is concerned as to the necessity for new cottages, I think the following townships are most urgently in need of increased provision:—

Township.		Number of Cottages suggested.	
Baddington	4
Leighton	2
Weston	4
Acton	4
Austerson	2
Baddiley	2
Sound	2
Brindley	4
Edleston	2
Faddiley	2
Henhull	2
Hurleston	2
Poole	2
Biekerton	4
Bulkeley	2
Ridley	2
Broomhall	2
Chorley	2
Coole Pilate...	4
Hankelow	2
Newhall	8
Woodeott	2
Wrenbury	4

“ It must be understood that these are only suggestions and are open to considerable alteration when full information has been gathered. I am of opinion that in practically every township of the district a few more cottages would be an advantage.

Number of new houses built during 1913	...	...	22
Number of dwelling-houses inspected under s. 17, Act of 1909	...	...	727
Number of such houses considered unfit for habitation	...	...	6
Number of representations made to Local Authority	..	...	1
Number of closing orders made by Local Authority	...	...	1

Number of houses where defects remedied without closing orders being made	...	...	...	...	213
Number of houses where defects remedied after closing orders made	..	...	...	...	0
Estimated or ascertained number of houses within limits of rent in s. 14 of Act of 1909	...	...	...	...	650
				out of 727 inspected.	
Number of such houses in respect of which notice was served during 1913	...	...	...	...	231
Number of such houses closed after notice	...	...	...	...	6
				voluntarily.	
Number of such houses where Local Authority has executed necessary repairs, etc.	...	...	...	...	0
Approximate number of back-to-back houses in district	...				12
Approximate number of cellar dwellings in district	...				0

NORTHWICH RURAL DISTRICT.—“Thirty-five new houses have been erected and 354 have been inspected, with the result that repairs to 79 houses have been done by representation to the owners of the necessity for them. Forty-three have been condemned by the Medical Officer of Health as unfit for habitation and on representation of this being made to the owners through the clerk, 20 have been overhauled and 21 are in process of being done, but with the result that three cheap labour cottages are lost. By the exercise of tact and discretion this excellent amount of work has been done without recourse to any compulsion. The worst feature of this record is that the bad houses are improved, but invariably the rents are also raised (of necessity) and the ‘cheap cottage’ is either made dearer or perforce left ‘nasty.’ The economic problem of providing a decent dwelling for the ‘pound a week’ man at a rent he can afford, being quite insoluble, if it is looked at merely from the £ s. d. standpoint. The sanitary authority is endeavouring to cope with this evil, and is building some six cottages at Delamere upon $1\frac{1}{2}$ acres of ground purchased from the Crown at £50 per acre; these cottages will be in pairs, and some have two bedrooms and some three. They will provide an excellent type of house for any working man and it is to be sincerely hoped that they may prove a patent success and lead to the further extension of building by the municipal authority, since no other provision for cottagers is available.

“Town planning has not been seriously considered as yet, the necessity for action not being apparent, although one or two meetings with an adjoining authority were held.

The Surveyor reports:—“Plans for the erection of 75 new dwelling houses have been approved by the Council, also for seven

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additions and improvements to dwelling houses and four for other erections. Inspections have been carried out as required and 35 dwelling houses approved for habitation. Thirty-one of the dwelling-houses certified are supplied from the Council's water mains, two from a public well from which excellent water is obtained and two from rain tanks as no other supply was available. Eighteen of the houses are connected to the Council's sewers and 17 deal with the sewage in tanks on land adjoining, 12 of which number have also soak-away filters. The majority of the proposed dwelling-houses approved during the year are at Barnton, by Messrs. Brunner, Mond & Co., in the process of estate development. The class of houses generally are a little too expensive for the labourer and more suitable for the artisan and skilled worker. But a change has been recently made and in substitution for some of the above houses a cheaper form of cottage is proposed to be built. There are two blocks of four houses and each house has a living room 13ft. 1½in. x 11ft., scullery (out of which is built the coal place and larder) 14ft 7½in. x 6ft. 9in., and three bedrooms upstairs 1st—14ft. 7½in. x 9ft. 4in., 2nd—10ft. 9in. x 7ft. 2in. and 3rd - 7ft. 7in. x 7ft. 3½in. Two of the bedrooms have fire-places and in addition to the copper and sink in the scullery a bath is fixed with movable draining board over the top. The walls between bedrooms are formed with 2in. coke breeze slabs plastered both sides. The floors of the kitchens are formed with wood blocks on concrete beds, and for the sculleries tiles on concrete. The W.C's. are the only part of the buildings under a separate roof. I am informed that these houses can be built to set at a cheap rent, and they may be considered a really good attempt to solve the housing problem. Three labourers' cottages have been lost in the township of Barnton during the year by reason of the application of the Housing Acts. The type of cottages referred to above will greatly relieve the acute demand for the cheaper class of house.

The Inspector reports :—

“The Inspections under these regulations have been for the past three years directed chiefly in that portion of the district known to require the most urgent operation of the Housing Acts and which will have been dealt with by the end of 1914, afterwards the percentage of action taken under Section 17 of the Housing and Town Planning Act will be considerably less and progress of inspections proportionately greater, for in dealing with houses under this section, progress is of necessity slower in obtaining the object of the Act without loss of houses ; thus of the 354 houses inspected during the year 43 have or are being dealt with under this section, 21 of which are at Barnton, four Marston,

one Wincham, 10 Crowton, two Little Budworth, one Marton and four in Cuddington. Of these houses the one in Wincham, a detached public house, was owing to subsidence rendered dangerous and on the Council taking action the owners finally closed the house and removed the whole structure, the site being now under water and one of the four in Marston was in a similar condition through the same cause, which on the Council issuing a closing order was closed by the owners and the order became operative, the site being unsafe. Four of the 21 houses named in Barnton, viz., a block of four has been owing to lack of space at the rear, made into three and a block of three in the same locality has been made into two for similar reasons and one of a block of eight (between the two previously mentioned blocks) now being dealt with, has of necessity to be surrendered to give through ventilation to the front house, which at present has only two rooms and a cellar with only one door, thus there are three labourers' cottages less in the village and the two houses in Little Budworth being back-to-back houses are to be made into one, making a total loss of six houses in the district, four of which are labourers' cottages. The work of restoration has been completed at 20 of the houses and the remaining 21 are in course of repair and will also be completed shortly. Of the other 311 houses inspected, repairs to windows, roof, spouts, floors, etc., has been obtained at 79 houses on representation being made to the owner without recourse to the repair section of the Act. Many others are dealt with under the Public Health Acts and are included in the nuisance returns."

RUNCORN RURAL DISTRICT.— "The action undertaken by your Council, acting on the various recommendations of the strong Housing and Town Planning Committee which you appointed to receive the reports of your Medical Officer and Inspector and Surveyors, has been already alluded to and the figures relating to these are embraced in the tabular statements appearing in this and previous Reports. Over 400 houses have been inspected during 1913 and extensive alterations and improvements have been carried out in all the townships which we have, up to the present, been able to visit and inspect. We are dealing with the various properties more or less in order of their importance or their necessities, the denser populations coming first under consideration ; later on the rural portions will receive attention."

TARVIN RURAL DISTRICT.—

" Number of new houses built during 1913 (6 not completed)	23
Number of dwelling-houses inspected under Section 17 of Act of 1909	85
...	...
...	...
...	...

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Number of such houses considered unfit for habitation ...	11
Number of representations made to Local Authority ..	19
Number of closing orders made by Local Authority ...	1
Number of houses where defects remedied <i>without</i> closing orders being made	25
Number of houses where defects remedied <i>after</i> closing orders made	0
Estimated or ascertained number of houses within limits of rent in Section 14 of Act of 1909	1750
Number of such houses in respect of which notice was served during 1913	40
Number of such houses closed after notice	11
Number of such houses where Local Authority has executed necessary repairs, &c.	0
Approximate number of back-to-back houses in district ...	0
Approximate number of cellar dwellings in district ...	0

“The number of inspections is small compared with 1912, but more work has been done getting alterations and improvements made in houses already inspected, e.g., in Tarvin three houses were unfit for habitation, these have been made habitable; drainage and closet accommodation improved. In Oseroft three houses which were short of air space in bedrooms have had roofs raised two feet. In Hockenhull two new houses have been built. In Beeston two new houses have been built, one house enlarged and another being partially rebuilt. In Kelsall two old houses have been brought up-to-date, two new houses have been built and four are in the process of being built. At Mouldsworth a house with insufficient air space has had the roof raised three feet and a slate roof put on instead of a thatched one.

“At Ashton a house considered unfit has been made habitable, also two new houses built and two being built. At Hargrave one house has been entirely overhauled and a house, which was unfit, has been demolished and two new ones built in its place. Two new houses have been built in Waverton. In Shocklach two houses are unoccupied, being unfit; one was pulled down because unfit and two houses have been built. In Tattenhall two houses were pulled down and rebuilt and six houses were made into three and through ventilation made in three. In Burwardsley three houses were pulled down and three were rebuilt. In Stretton two were pulled down and two were rebuilt and one house is unoccupied, being unfit. In Broxton one house was rebuilt. In Tilston three houses were altered, through ventilation and extra accommodation being made.

“With regard to the defeiency of aecommodation of the housing of the working classes, it is difficult to say to what extent this exists. I should say the parishes of Cotton Edmunds, Caldecott, Coddington, Golborn David, Hockenhull, Huntington, Newton and Tattenhall are all in want of further cottage accommodation.

CLASSIFICATION OF DEFECTS FOUND IN INSPECTION UNDER
HOUSING AND TOWN PLANNING ACT, 1909.

Northern Division.	Remedied.				In hand.
	Defects.	Closing Order.	Without.		
Water supply	3	—	2	...	1
Closet accommodation	12	—	4	...	8
Drainage	15	—	10	...	5
Condition as to light, free circulation of air, dampness and cleanliness	25	1	15	...	9
Paving of yard and outhouses	4	—	3	...	1
Arrangement for deposit of refuse, ashes, &c.	—	—	—	...	—
Existence of any room, &c., Sub-section 7 of Section 17 Housing and Town Planning Act, 1909	—	—	—	...	—
Any defects in other matters which may tend to render house dangerous or injurious to health	—	—	—	...	—
Overcrowding	4	—	—	...	4
	63	1	34	...	28

Southern Division.	Remedied.				In hand.
	Defects.	Closing Order.	Without.		
Water supply	27	—	19	...	8
Closet accommodation	50	—	20	...	30
Drainage	47	—	21	...	26
Condition as to light, free circulation of air, dampness and cleanliness	29	—	23	...	6
Paving of yard and outhouses	12	—	11	...	1
Arrangement for deposit of refuse, ashes, &c.	54	—	35	...	19
Existence of any room, &c., Sub-section 7 of Section 17 Housing and Town Planning Act, 1909	6	—	4	...	2
Any defects in other matters which may tend to render house dangerous or injurious to health	7	—	6	...	1
Overcrowding	16	—	13	...	3
	248	—	152	...	96

TINTWISTLE RURAL DISTRICT.—“The number of houses inspected under and for the purpose of Section 17 of the Housing and Town Planning, &c., Act, 1909, was thirty. No houses were considered unfit for habitation. No representations were made to the Local Authority, nor were any closing orders made by the Local Authority. In the case of 17 houses, the deficits were remedied

HOUSING.

without closing orders. Twenty-five notices were served during 1913 and one house closed after such notice. The Local Authority has not found it necessary to execute any repairs. There are two back-to-back houses in the district, but no cellar dwellings. The number of houses in the district within limits of rent in Section 14 of the Act of 1909 is 440. Three new houses have been built. There is still a dearth of cottage houses containing three bedrooms. The chief deficits found were :—Slopstone pipes too short, flagging bad, no trap to slopstone pipes, defective roof, windows not made to open.”

WIRRAL RURAL DISTRICT.—“The change which is taking place all over Wirral may be summed up in the one word urbanisation. The whole area is in a state of transition and should the plans for more direct communication with the Lancashire side of the Mersey mature the rural character of Wirral will rapidly become a matter of past history. New, wide, modern roads are being laid out in various parts of the peninsula, the ultimate effect of which will be the conversion of what is now agricultural land into residential sites for the dwellings of town workers. Here and there old thatched cottages are still to be found, but modern habitations are largely in the majority in every township. The trend of the development at the present time is in the direction of building residences and not in the erection of habitations for the working classes. Reference to the Report on ‘Migration from Rural Districts,’ published by the Board of Agriculture and Fisheries, shows the difficulty of obtaining accurate information concerning Wirral, for it is stated that ‘only in the North Lonsdale District of Lancashire and in the Wirral District of Cheshire has any reduction in the number of farmers during the last ten years been noted and in the latter district correspondents differ.’ Again in relation to the question of decrease in permanent labourers employed, correspondents differ with regard to Wirral. The reduction of temporary labour is reported by some informants and no reduction is asserted by others. The supply of farm labourers in the neighbourhood of Birkenhead is given as ‘barely sufficient.’ Under the heading of ‘Extent, Cause and Direction of Migration’ it is interesting to note that no reference is made to Wirral, but that some correspondents account for migration by ‘the present system of education and the lengthened period of schooling is stated to render country life unattractive to children,’ and ‘a scarcity of cottages’ is also given as a cause. The report states that ‘the lack of housing accommodation is frequently mentioned as influencing men to leave the villages. It appears paradoxical that complaint should be made at the same time of dwindling population and insufficient cottages, but there can be

no doubt that the question of rural housing is acute. In this connection the competition of the townsman has aggravated the situation and allusion is made to the turning of cottages into villas and to the increasing tendency fostered by bicycles of urban workers to live in the rural districts.' The last paragraph summarises the causal factors of any cottage difficulties which are encountered in Wirral and these would be minimised if, on plans being passed for large residences, cottages were insisted upon for the habitation of gardeners, motor drivers and others, who are bound to be associated with the mansion.

"During the latter part of 1913 housing inspection has been conducted vigorously under the Housing and Town Planning Act, a special Inspector having been appointed to carry out this important work in a systematic way. The defects found were dampness, rooms needing to be stripped, eaves gutters needed, unsatisfactory water supplies, deficient closet accommodation, want of ventilation, &c.

" Number of dwelling-houses inspected under s. 17 Act of 1909				...	...	...	...	541
Number of such houses considered unfit for habitation				...				4
Number of representations made to Local Authority				...				541
Number of closing orders made by Local Authority				...				2
Number of houses where defects remedied without closing orders being made				...	...	...	work in progress	
Number of houses where defects remedied after closing orders made				...	...	...	...	0
Estimated or ascertained number of houses within limits of rent in s. 14 of Act of 1909				...				2238
Number of such houses in respect of which notice was served during 1913				..	...	...	...	541
Number of such houses closed after notice				...				0
Number of such houses where Local Authority has executed necessary repairs, &c.				...				0
Approximate number of back-to-back houses in district				...				0
Approximate number of cellar dwellings in district				...				0

Table showing approximate number of back-to-back houses and cellar dwellings in the several districts in the County in the year 1913.

	Back-to-back Houses	Cellar Dwellings.
MUNICIPAL BOROUGHs—		
Congleton	12	0
Crewe	65	0
Dukinfield	108	0
Hyde	17	0
Macclesfield	150	0
Stalybridge	410	0
OTHER URBAN DISTRICTS—		
Alderley Edge	2	0
Alsager	0	0
Altrincham	0	9
Ashton-upon-Mersey	0	0
Higher Bebington	0	0
Lower Bebington	2	2
Bollington	6	0
Bowdon	0	0
Bredbury & Romiley	8	0
Bromborough	0	0
Buglawton	0	0
Cheadle & Gatley	6	0
Compstall	15	1
Ellesmere Port & Whithy	0	0
Hale	0	0
Handforth	0	0
Hazel Grove & Bramhall	0	0
Hollingworth	28	0
Hoole	0	0
Hoylake & West Kirby	6	0
Knutsford	14	0
Lymm	4	0
Marple	46	0
Middlewich	0	0
Mottram	6	5
Nantwich	4	0
Neston & Parkgate	0	0
Northwich	130	0
Runcorn	—	0
Sale	No record.	0
Sandbach	4	0
Tarporley	0	0
Wilmslow	0	0
Winsford	6	0
Yeardsley-cum-Whaley	0	1
RURAL DISTRICTS—		
Bucklow	0	0
Chester	0	0
Congleton	0	0
Disley	9	0
Macclesfield	0	0
Malpas	0	0
Nantwich	12	0
Northwich	2	0
Runcorn	24	4*
Tarvin	0	0
Tintwistle	2	0
Wirral	0	0

* Only one occupied.

Section XIII.—Miscellaneous.

Dairies, Cowsheds and Milkshops.

There is no doubt whatever that of recent years the amount of public attention which has been directed to a pure milk supply has borne good fruit. The country is more than ready for the Milk and Dairies Bill and the sooner it comes the better for all concerned. The repeated withdrawals of this Bill have been most disappointing to public health officials and I am not at all sure that the latest draft is so good as the one immediately preceding it. However, I shall be content to have a start made—improvements can come later.

The value of plenty of air-space, good means of lighting and ample ventilation is becoming more and more appreciated by the large majority of farmers. The average milk seller has, however, a good deal yet to learn and until stringent and detailed regulations are not only made but strictly enforced much of the milk sold will be liable to contamination after it has left the farm. The reports shew clearly that increasing attention is being given to these matters by Sanitary Authorities and their officials as may be seen from the several extracts I publish from the Reports of the Medical Officers of Health and Inspectors.

CREWE MUNICIPAL BOROUGH.—“There are 45 cowsheds in the borough. These have all been frequently inspected during the year. As in previous years, the greatest cause for complaint has been the failure on the cow-keepers’ part to carry out the necessary daily cleansing without undue delay and it is hoped that the attention given to this matter will impress upon those concerned the necessity for greater cleanliness.

“There are 81 premises on the register where a retail trade is carried on in milk. This is an increase of one from 1912. Many of these shops are quite unsuited for the sale of milk as they lack proper storing room. They are usually small premises where greengrocery, etc., is sold and the milk is in most cases kept in an earthenware or tin vessel on the counter or adjoining shelf. The combination of milk selling with other business in a small shop is not desirable in the health interests of the public.

“The following additional regulation prescribing precautions to be taken by purveyors of milk and persons selling milk by retail

DAIRIES, COWSHEDS AND MILKSHOPS.

in the borough against infection or contamination came into force on August 1st, 1906 :—

‘Every purveyor of milk or person selling milk by retail shall cause every vessel containing milk for sale to be kept properly covered or to be otherwise sufficiently protected from contamination by dust or flies.’

“The country as a whole is still awaiting promised legislation to improve its milk supply and when so much public money is being expended under the National Insurance Act for the prevention of tuberculosis, it is high time that all Local Authorities had more effective means of preventing the supply of tuberculous milk to the community.”

STALYBRIDGE MUNICIPAL BOROUGH.—“The farms within the borough number 33 and these include 55 separate cowsheds and 15 dairies. These premises have been inspected as in previous years and are, generally speaking, kept in a cleanly condition, better attention being given to the removal of the manure than in former years. Improvements have been made at several of the farmsteads.

“Notices have been served during the year for the following defects :—Three dirty condition of the shippens ; two defective floor surfaces ; two defective lighting arrangements ; two unsatisfactory dairy accommodation ; and five instances the water supply was neither good nor sufficient. Most of these have received proper attention and there is every reason to believe that the remainder will have attention shortly.

“A Special Report was presented to the Sanitary Committee in June last. This resulted in the Visiting Sub-Committee visiting six of the farms and notices were sent to the trustees of the estate drawing their attention to the conditions now prevailing and calling upon them to make alterations to make the farms satisfactory for dairy purposes. It is pleasing to report that the water supplies at some of these farms—Higher Harpley and Lower Harpley farms, Luke Fold Cottages, Coopers Green and Sun Green Farms and the cottages in the vicinity—have now been completed. Water now is supplied by pipes to each cottage, farmhouse and to the shippens.

“The milkshops within the borough, which number 44, have been periodically inspected. There has been no necessity to complain of the storage of the milk on these premises during the year.”

DAIRIES, COWSHEDS AND MILKSHOPS.

BOLLINGTON URBAN DISTRICT.—“Milk is sold in the village by the various farmers of the district itself or its immediate neighbourhood. The farms situated in the district are regularly inspected and their shippons are required to be limewashed twice a year at least. This condition has been complied with to the satisfaction of the Nuisance Inspector. It is a question, however, if the proper amount of air space is provided in every shippon in the district and on this point your Inspector is taking full particulars. With regard to the keeping of milk it should be impressed on the farmers that proper receptacles for this purpose should be kept and used. Open vessels, such as shallow pans and steens, are not satisfactory. Milk cans, with lids, which can be thoroughly scoured out, should be more frequently used. It is the opinion of your Medical Officer that all milk should be cooled by the farmers right away. This, whilst not affecting the quality of the milk, makes for security against the growth of harmful germs in it and is of use against the carrying of infection by the means of milk supply.”

BREDBURY AND ROMILEY URBAN DISTRICT.—*Milk Supply*—“This is abundant and of good quality. It is all produced in the district and most of it is despatched direct from the farms without any intermediate storing or delay. Information reached the Sanitary Committee of suspected diseased cattle in six cases during 1913 and in each case I made special investigations at the farms suspected. In one case I found a tuberculous cow and a veterinary surgeon who was called in confirmed the diagnosis and the owner had the cow destroyed forthwith. In a second case the owner had the cow destroyed on my advice alone; in a third case the County Inspector was informed of the suspicion and ordered the cow to be kept isolated for a time and afterwards released it, as it was found not to be tuberculous. In the other three cases the herds were quite healthy and the rumour had originated on account of accidentally injured cattle only. From my inspections of the farms in the district this year I am pleased to report a decided improvement in the general cleanliness, ventilation and airspace of the shippons where milk cows are kept and there is a disposition on the part of the farmers to maintain these improved conditions and also to prevent any disease amongst their herds. The Tuberculosis Order of 1913, which came in force on the 1st May, has been followed since that date and instructions have been given to the farmers to notify, at once, any suspected case. Each farmer was supplied with a printed copy of the Order by the District Council and it will no doubt help them to understand the gravity of the subject better. A letter of enquiry was sent to the County

DAIRIES, COWSHEDS AND MILKSHOPS.

Analyst on the milk question and his reply is worth repeating, as it will help to confirm my own opinion that this district has a supply of wholesome milk and that proper supervision is being exercised by the authorities to detect any fault. He says: 'I beg to assure you that samples of milk are regularly taken in your district and that it is many years since one of your samples was reported as being below the standard.'

'In previous reports I have drawn attention to general inspection of the dairies and cowsheds and these have been followed up and notices served wherever defects were found ; in one case, at Greave, the farm building has been improved and in another, Yew Tree Farm, the house has been put in a proper state of repair. There are no less than 60 farms on which cows are kept and the number of cows is about five hundred.'

BUGLAWTON URBAN DISTRICT.--"Under the Dairies, Cowsheds and Milkshops Order, 60 inspections were made and 23 were found to be defective in various ways, such as defective or no drainage, drain in cowshed, defective light or ventilation and defective floors. During the year two cowsheds were re-built and another is about to be dealt with in the same way."

CHEADLE AND GATLEY URBAN DISTRICT.--"There are 42 dairies, to which are attached 79 cowsheds and two milkshops in the district. They have all been regularly visited by your Inspector and I have also visited several. They are on the whole clean and the animals well cared for. Two cowsheds have been repaired. In my other Annual Reports I have remarked on the great improvement there is in the lighting and ventilation and cubic space allowed per cow as compared with formerly. Now there is in the majority of cases over 600 cubic feet of space per cow. Out of the 79 cowsheds there are only 14 with a cubic space per cow under 600 cubic feet and none under 400."

COMPSTALL URBAN DISTRICT.--"The following rules have been distributed to every farmer in the district.

1. In the spring and autumn the cowshed should be cleaned, then lime-washed, especially the roof. No other stock, fowls or pigeons must be allowed in.

2. Manure must be removed in the morning after milking, in the afternoon an hour before milking, when fresh bedding must be put down to keep udders clean.

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3. Before milking, udders should be wiped with a clean dry cloth, and the teats with a clean damp cloth. The fore milk should be milked on to the floor, as it contains dirt. Milk from an inflamed quarter should be rejected.

4. The milker should wear a clean washable coat and before milking should thoroughly wash his hands in hot water and dry them on a clean towel.

5. The milk in the pails should be kept covered to keep out dirt. Tinned steel pails with lids are best.

6. Whatever the season the milk should be strained and refrigerated at once, then immediately passed through a fine gauze sieve (at least 75 strands to the inch).

N.B.—Nearly all outbreaks of disease attributed to milk are due to its contamination after leaving the cow, therefore—

(a) No one suffering from sore throat illness should milk or handle milk.

(b) Milkers should be trained always to wash their hands after attending to the calls of nature."

ELLESMERE PORT AND WHITBY URBAN DISTRICT.—"The milk supply is mostly from cows within the district or from the immediately adjoining portion of the rural area. Many of the cowsheds are not up to the standard of modern requirements. Lime washing, as a rule, is done with regularity; but as the cowsheds are in the possession of tenants, they do not see their way to undertake alteration in their landlord's property. In some instances the shippens are mere wooden sheds which, although erected for temporary purposes, have been allowed to persist. It has to be remembered that for the greater part of the year the shippens are empty and it can be said for the rickety wooden buildings that they are well ventilated. There are 35 dairies, cowsheds and milkshops. One shippen was closed during the year as the premises were unsatisfactory. No action has been taken to determine whether any tuberculous milk is sold in the town."

HALE URBAN DISTRICT.—"The milk in the district is supplied by 43 vendors, only 13 of whom are resident in the district, the remaining 30 being from neighbouring districts. One of the vendors, however, who resides just outside the district procures his milk from a cow-keeper in the district.

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“With one exception no fault can be found with the condition of the premises, and no notices, written or verbal have been necessary. The exception is, unfortunately, in connection with a practice which cannot, with present powers, be stopped, that is a small ‘general dealer’ who sells milk out of his shop in which are stored potatoes and other vegetables, crockery, tobacco, etc., in close proximity to the milk, it being, in premises such as these, practically impossible to keep the milk perfectly clean, as there is always a quantity of dust floating about. I have required this vendor to keep the milk vessels covered with muslin, which forms some protection, but I am far from satisfied that he carries out this requirement.”

HOYLAKE AND WEST KIRBY URBAN DISTRICT.—“As mentioned in previous reports, in some of the outlying and more rural portions of the district there is still a tendency to keep large manure middens in close proximity to the shippens. The inadvisability of this habit has been pointed out to the farmers. The pamphlets of the Board of Agriculture relating to structure of cowsheds and cleanliness of the dairy have been circulated among interested persons.”

NESTON AND PARKGATE URBAN DISTRICT.—“There are 26 persons registered under the dairies, cowsheds and milk-shops order. The district continues to send large quantities of milk to Birkenhead and Wallasey. Lime washing has been done with regularity, two statutory notices were required. In every instance cows are only kept in the shippens during the severe winter weather and are turned out to graze whenever possible. The neighbouring Rural District sends a quantity of milk into Neston. The milk sold is wholesome, but there was one prosecution for selling milk below the legal standard. No bacteriological examinations of milk have been made during the past year.”

RUNCORN URBAN DISTRICT.—“The milk supply of the Urban District gave great concern to the authority during the greater part of the year. Some allegations were made that some milk distributed in the town was not quite as pure as it might be. These statements were followed up by the authority by having several samples bacteriologically examined. The allegations, in a few instances, appeared to be well founded, but there was no direct evidence forthcoming that very baneful result followed the use of the milk, but the investigation was considered by the authority of sufficient importance to justify them in referring the matter to the County Authority at Chester, but with no satisfactory result,

for it appears that the County Authority draw the line at analysis for milk adulteration, but fight shy at bacteriological examination, which seems to be the only safe course to be adopted when milk from a diseased cow is under examination. Possibly, in due course, more care will be bestowed on the examination of milk, herds of cattle and if so, probably in time there will be less need for the outlay which seems at present to be inevitable in meeting the demands for the elimination of the white scourge.

"I have often been struck by the happy-go-lucky way in which milk is distributed up and down the district from carts. From my point of view the present method is not a desirable one to be continued and should be abandoned, for I look upon it as a very uncleanly method of milk distribution. The milk distributor sits in his milk 'shandry,' or possibly leans over his milk cans when a customer is to be supplied, dips the measure in the milk can and he repeats the same process every time he serves a customer. Flies get a ready dinner from the outside of the measure when the distributor is moving about from place to place. The can lid should never be moved when the milkman is on his distributing rounds, but the can should be fitted up with a tap near the bottom of the can and this will enable the distributor to serve his customers with greater facility, keep the milk clean and avoid the dirty habit that now prevails of dipping the milk measure in the milk every time a customer has to be served. The milk distributor should be compelled to wear a 'smock frock,' made from coarse linen and changed twice a week. It is just as necessary that the milkman should be as cleanly in his habits and person as it is imperative that the article which he sells should be of good quality, *pure and unadulterated*."

BUCKLOW RURAL DISTRICT.—"Inspections of dairies and cowsheds have been carried out in the usual systematic fashion by Mr. Metcalfe; but I have not felt it necessary to accompany him this year. The majority of the sheds are now fairly satisfactory in structure; more attention has been given therefore to improving the standard of general cleanliness, of both premises and cattle. Notices, formal or informal, have been served as required. Two new cowsheds were built during the year and several old ones improved. Tuberculous milk was discovered (by examination in Manchester) in the case of six cows on five farms; two in Mobberley, one each in Plumbley, Peover Superior and Styal. Two cows, on one farm in Mobberley, condemned by Manchester, were afterwards reported harmless by the Cheshire Authorities; and the matter, which is a very serious one for the farmer, is still being enquired into. The cases were all dealt with by the Police.

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“This appears to be the place to draw attention to the fact that young calves are frequently crowded into small pens, which are often in a condition of filth which is abominable. Regulations are required to empower sanitary authorities to deal with all bovine animals, instead of milch cows only, the latter being, rightly or wrongly, the limit imposed by many authorities on their officers. And when definite rules and regulations exist, the officers ought to be able to enforce them by legal process, without the formality of carrying every trifling matter to the authority for special permission to act.

Mr. Metcalfe adds:—“There has been much improvement in the structural condition of cowsheds during the past few years, and this leaves more time for me to point out to the tenants the advantages of more fresh air and cleanliness. Special attention was given to the cleanliness of cows, milk vessels, milkers and the methods of carrying on the milk business generally.

“There is here room for improvement, some of the persons concerned advance very slowly. Many of them have still the opinion that to have sheds hot and stuffy is the right and only way to get the best results from the cow. It is here and in the neglect to devote a few minutes each day to the ‘grooming of the cows’ that the chief faults are. The attention of the Council will be drawn to any defaulters during 1914 and authority to take legal proceedings will be asked for. I consider that quite enough talking and explaining has been done and that legal action is the only means left to deal with some of them. They are, however, only a minority and I am glad to report that on no occasion during the year has it been necessary to draw attention to any neglect with regard to the cleanliness of milk vessels and cooling apparatus. If the retailers of milk gave as much attention to the cleanliness of their cans, carts, assistants and the methods of handling milk, as the majority of farmers do, there would be very little shouting about ‘dirty milk.’

“The figures as to number of cowkeepers and milk sellers, etc., in the district remain as last year.”

MACCLESFIELD RURAL DISTRICT.—“The supervision of dairies and cowsheds has been diligently performed and 294 inspections have been made during the year. Thirteen cases of tuberculosis of the udder in cows were detected in the district by the Manchester Health Authorities. In each case the cow was slaughtered, permission being given for the sale of the carcase where it conformed to the Local Government Board’s requirements. Where

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defects in the cowsheds were found by the Medical Officer of Health for the County, on his inspection, the owners were notified in order that the work might be carried out."

NANTWICH RURAL DISTRICT.—The Inspector reports:—"I am pleased that I am able to report that improvements have been made in the sanitary condition of many of the cowsheds and dairies in the district. Sixty-seven windows have been put in cowsheds. In twenty-nine cases the lofts have been raised, ten drainage systems have been provided, nine floors relaid with impervious materials, three cowsheds built, four new dairies, presshouses and milkhouses erected. In several cases glazed earthenware feeding troughs have been provided. They are an undoubted improvement on the old kind of feeding trough. It is pleasing to note the interest that the tenant farmer and the landlord manifest in the improved housing of cattle. The fact has long been recognised that the more cattle are housed the greater the risk of tubercular infection and the less chance of withstanding or recovering from such infection. The improvements in the lighting and ventilation of cowsheds is certainly one of the ways of eliminating the disease and of preventing its development. In a number of cases the cowkeepers limewash their cowsheds several times during the year by means of a spraying machine; a practice highly commendable and one we should like to see more extensively adopted."

NORTHWICH RURAL DISTRICT.—"This is par excellenc a dairying district and there are 309 registered dairies and cowsheds. Most of them are high-class farms and everything which can be done to obtain pure milk is generally adopted. There are two Standing Committees, of this authority which each take half the district and visits shippens, &c. and get improvements in drainage ventilation, air space, &c., &c., in numerous instances. No notices for non-compliance with regulations, nor any legal action has been taken. As milk is sent in large quantities from this district to the large towns, *i.e.*, Liverpool, Manchester, Salford, St. Helens, &c., the milk is constantly being tested for tuberculosis and five tubercular beasts have been notified. In such cases the affected beast is isolated and usually slaughtered and dealt with by the police.

The Inspector Reports:—

"There are 391 registered cowkeepers and purveyors of milk in the district, 10 of which have been granted during the year and the systematic inspection for record purposes has

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discovered 15 farms which through change of tenants and other causes have ceased to sell milk. Several cowsheds have been entirely rebuilt and others re-arranged by the owners and reports upon 21 cowsheds await the consideration of the Standing Committee appointed by the Council to deal with such reports. Preliminary notices have been issued to the whole of the registered farmers as to limewashing and inspections show that the work has been faithfully carried out. Outside authorities have notified five tubercular cows after analysis of milk in their district, which under the new regulations have been passed on to the police and have been dealt with by them; 28 tubercular cows have been notified to the Clerk by the police since the Tuberculosis Order came into operation and inspections have followed in due course. The necessity for calling in veterinary advice as mentioned in the report for 1912 has not arisen during the year."

RUNCORN RURAL DISTRICT.—"The number of persons registered for the sale of milk varies from year to year. In 1912 there were 199 of such; of these, by far the greater number possess or control 'cowsheds' under the 'Dairies,' etc., Order of 1885, from which the milk is forwarded to the larger industrial centres of population. In practically all cases, the milk is dealt with entirely outside the dwelling-houses and, as far as practicable, by persons who do not reside on the premises; but should any infectious disease occur on the premises, the further sale of milk is (1) either prohibited altogether during the continuance of the disease on the premises, or (2) is dealt with in accordance with the local regulations adopted by your Council under the Dairies, Cowsheds and Milkshops Orders of 1885 and 1899. These regulations are strictly enforced within your district in the event of the occurrence of infectious diseases.

"The new Tuberculosis Order of 1913 which came into operation on May 1st, 1913, is framed to assist in the campaign against tuberculosis and will greatly forward the efforts and facilities for stamping out this disease, both in cattle and human beings. In one case at Aston, the County Medical Officer and a Veterinary Surgeon accompanied me in an examination of the milking stock."

TINTWISTLE RURAL DISTRICT. — "Regulations under the Dairies, Cowsheds and Milkshops Order were made by the Council in 1901 and came into force in October of the same year. There are 62 cowkeepers registered in your district. Two new cowsheds are in the course of construction, being built on the latest

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lines as regards ventilation, etc. They have been regularly visited by your Inspector and I have made several inspections. They are on the whole clean. It would be much better if the farmers treated a cow in the same way they treat a horse, viz., brushing and cleaning it daily."

WIRRAL RURAL DISTRICT.—"There are 265 licensed cowsheds and milk sellers in your district. Not only are the neighbouring Urban Districts supplied but also the towns of Birkenhead, Wallasey and Liverpool. The cowsheds are regularly inspected and frequent lime washings insisted upon wherever they are required. The shippens vary from the model dwellings of wealthy persons who make farming a hobby, down to primitive sheds where both ventilation and lighting are deficient. During the last ten years there has been a considerable advance in the provision of light and air for the animals, as there is a general recognition of the fact that cows are more profitable when well-housed. The arguments used against further improvement in this direction are generally (1) that it is the occupier who is called upon to do the improvement and not the owner, which is unfair; (2) that better housing is not required as the cows are in the open air most of the time. At some of the farms the milking arrangements are of a model kind. No inspector with veterinary knowledge has been appointed to examine the cows."

Slaughter-houses.

I think it may safely be asserted that these premises are satisfactorily kept under supervision. It is not a very easy matter in a large rural district to ensure this but in urban areas there should be no difficulty. The matter is particularly well managed in the Borough of Congleton under the supervision of a Veterinary Inspector who has had special training and experience in meat inspection. His remarks are on this account of special interest.

I reproduce a few extracts from the District Medical Officer's and Inspector's Reports on this matter.

CONGLETON BOROUGH.—"The Veterinary Inspector reports:—That there are 13 private slaughter-houses, of which 11 are in constant use and that 12 rounds of inspection were made and that, generally speaking, they were kept in a clean condition, better attention having been paid to whitewashing and the removal of garbage; that, in addition to the visits made at his own instance, requests were received on seven occasions for special visits in respect of doubtful carcasses and that one of them was

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wholly condemned and the offals of two others as unfit for human food on account of tuberculosis. The frozen meat shops had been frequently visited without anything unusual being discovered, the supplies having been carefully regulated and the meat sold quickly; that the amount of slaughtering was approximately as follows:—Cattle 950, sheep and lambs 4,000, pigs 2,300 and that the quality was high class in most instances. He also frequently visited the fish stalls in the Market Place on Saturday nights, but did not find any unsound fish.”

ALSAGER URBAN DISTRICT.—“There are three slaughter-houses and these have been kept under constant supervision, but such private premises do not lend themselves to much improvement. I believe the owners do their best to keep them sanitary, but I can only describe them as unsatisfactory. Flies which swarm over such places in hot weather have to a certain extent been kept in abeyance by sprinkling refuse heaps, &c., with anti-septics. Offal is kept in iron bins, fitted with close-fitting covers and their contents are removed from the premises as soon as possible.”

RUNCORN URBAN DISTRICT.—“Cow-houses, stables and slaughter-houses should receive a share of the weekly attention that the law imposes on the authority as necessary. Cow-houses should be of good size, airy, cleanly kept, well ventilated, with an arrangement for the admission of some sunlight. The storage of manure should not be allowed for more than one week. Flies breed with great rapidity in these middens and they are the harbingers of evil wherever they are. All cow-houses should be periodically limewashed with hot lime and the representative of the authority should see that this sanitary necessity is done as often at least as the law requires. For I am afraid, as at present, this is more honoured in the breach than in the observance. Some cow-houses have come under my notice recently and I regret to have to observe that, in my opinion, their condition, as I found them, does not come up to what the law requires, but the authority is giving attention to these urgent matters and possibly they may have to adopt drastic measures if the law is not complied with.”

WILMSLOW URBAN DISTRICT.—“There are eight slaughter-houses in the district. All were inspected. One new one has been built and one has been pulled down. The use of another has been discontinued owing to structural defects. These would require to be remedied before it could be used again. The modern slaughter-houses comply with all requirements and the

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others are in a fairly satisfactory condition. No carcases or parts of carcases were condemned for tuberculosis during the year. Three butchers use the Greener gun for killing and are highly pleased with it. The advantage is that killing is carried out as humanely as is possible. The gun is applied to the beast's head and the shot fired. The poleaxe is efficient in expert hands, though even the expert misses his aim occasionally. But what of the learner? Every man has to learn and it is chiefly then that the poleaxe may be badly used and a beast may have to be struck twice or more times before it falls. With the Greener gun the tyro never need fire more than once and the animal is made insensible instantaneously. According to those who use the gun the condition of the meat is not unfavourably affected thereby."

Canal Boats.

There are only a few districts in which the inspection of canal boats calls for special attention, *e.g.*, Runcorn, Nantwich, Middlewich, Northwich, Ellesmere Port, Stalybridge, Altrincham and Winsford. In all these districts supervision has been well maintained as may be seen from the notes I quote from in several Annual Reports.

STALYBRIDGE MUNICIPAL BOROUGH.—The Inspector reports :—
 "In presenting my Annual Report upon canal boats which have been inspected during the year 1913, I beg to state that the number duly examined is 33. The condition of these appeared to be on the whole very satisfactory, with the exception of several infringements of the Canal Boats Acts and Regulations. These infringements are with respect to eight boats, and are eleven in number—four in so far that the boats required overhauling and painting; two, no water vessel on board; two, no certificate on board; two, certificate did not identify the boat; and one, the registration number was not marked on the side of the boat. With respect to these infringements, I have received five certificates testifying to the complaint notes being complied with. Whilst in the other six cases I anticipate receiving the certificates in the course of a few days. I have also received three certificates respecting three boats inspected last year, testifying that the complaint notes have been complied with. All the occupants appeared to be in good health and free from infectious disease."

ALTRINCHAM URBAN DISTRICT.—"During the year 1913, 75 visits were paid to 53 boats. Of these boats 46 were found to be in a satisfactory condition and seven required attention, namely: paint of cabins defaced three, cabin in bad repair one, no registered

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number painted upon the boats two, not having the required certificate on board one. Six of the complaints were remedied and correspondence is proceeding regarding the other one. The cabins contained living accommodation for 233 persons and were occupied by 131 persons, 100 males, 26 females and five children under 12 years of age. There was no case of infectious disease on board."

ELLESMERE PORT AND WHITBY URBAN DISTRICT.—"The Inspector states that he makes monthly inspections and I have also visited the boats. 76 boats have been inspected, 22 of which had been sent here from other places for repairs. No legal proceedings were necessary and only two infringements of the Acts were recorded. There was one notification of infectious disease, after which the vessel was disinfected and a similar procedure was carried out on a boat after a death from cancer."

NANTWICH URBAN DISTRICT.—"One hundred inspections were made during the year and the following infringements of the regulations were found :—

Boats with dilapidated certificates	...	...	2
Boats not carrying registration certificates...		...	1
Boats overcrowded	...	...	1
Boats requiring docking and re-painting	...	...	5

"All the above-mentioned infringements were notified to owners and rectified.

Total number of boats on register	...	...	78
Total number of boats believed to be in use or available			15
Total number of boats either broken up or registered elsewhere	...	...	63

"No infectious diseases have been notified as occurring on canal boats. No legal proceedings were taken during the year."

NORTHWICH URBAN DISTRICT.—The Sanitary Inspector reports :—"Periodical visits have been paid to that portion of the river which passes through the district. Many boats have been met, but being registered under the Merchant Shipping Acts do not come under my supervision. Five came under the Canal Boats Act, four being in good order, but one had no certificate aboard and the owner was notified and the certificate produced at once."

CANAL BOATS—OTHER PREMISES REQUIRING SUPERVISION.

WINSFORD URBAN DISTRICT.—“Only two boats on the register; both trade outside the Council’s area, coming to Winsford for repairs only. The large fleet of steamers and barges, owned by the several salt firms, whose headquarters are at Winsford, are all registered under the Merchant Shipping Acts, thereby precluding supervision by officers of the Local Authority.”

NANTWICH RURAL DISTRICT.—“Sixty one boats were inspected and with two exceptions were found to be in a satisfactory condition. Two of the boats carried offensive cargoes. The majority of the boats inspected belonged to the Shropshire Union Railway and Canal Company.”

NORTHWICH RURAL DISTRICT.—The Inspector reports:—“The Council’s Report of inspections of canal boats shows that 61 boats were examined during the year and 34 infringements of the Act and Regulations remedied on 31 boats and certified accordingly, viz.:—absence of certificate 14, certificate not identifying the owner 1, marking 2, overcrowding 3, females over 12 improperly occupying 2, painting 4, dilapidation 4, without pump 1, and no proper water vessel 3. No case of infectious disease was discovered or notified during the year and it is due to the occupants of the boats to say that the cleanliness of the cabins inspected was very much to their credit.”

Other Premises requiring Supervision.

It is evident from the Reports received that such premises as factories, workshops and workplaces, common lodging-houses, offensive trades, etc., are under regular and satisfactory supervision. It would serve no really useful purpose to quote details on these matters in the absence of special circumstances.

Recommendations in Brief for Future Action.

1. That the Councils of the Municipal Borough of Dukinfield and of the Urban Districts of Altrincham, Runcorn and Winsford should be asked to consider the question of the adoption of the Early Notification of Births Act and the employment of such agencies as may be made available for carrying this Act into effect.

2. That the County Medical Officer of Health be authorised to furnish the County Insurance Committee with the information contained in this Report on the subject of Tuberculosis.

3. That the attention of the several Councils concerned be drawn to the inadequate water supply and sewerage in the districts mentioned on pp. 151-2 and 181 to 183, respectively, of this Report and that they be invited to forward their observations thereon to this Committee.

4. That the attention of the following Councils be drawn to the inadequacy of the number of inspections carried out during 1913 under the Housing (Inspection of District) Regulations and that they be invited to forward their observations thereon for the consideration of this Committee :—

Congleton Municipal Borough.
 Crewe Municipal Borough.
 Hyde Municipal Borough.
 Stalybridge Municipal Borough.
 Ashton-on-Mersey Urban District.
 Lower Bebington Urban District.
 Bromborough Urban District.
 Buglawton Urban District.
 Handforth Urban District.
 Hollingworth Urban District.
 Knutsford Urban District.
 Marple Urban District.
 Mottram-in-Longdendale Urban District.
 Nantwich Urban District.
 Northwich Urban District.
 Sandbach Urban District.
 Wilmslow Urban District.
 Winsford Urban District.
 Bucklow Rural District.
 Chester Rural District.
 Malpas Rural District.
 Northwich Rural District.
 Runcorn Rural District.
 Tarvin Rural District.
 Tintwistle Rural District.

Administrative County of Chester.

APPENDIX OF STATISTICS FOR 1913.

TABLE I.—Population, Area, Births, Deaths, &c.—

Showing enumerated and estimated population, area, persons per acre, births and deaths, birth-rates and death-rates, proportion of deaths of infants to births, deaths from seven principal zymotic diseases and corresponding death-rates.

TABLE II.—Mortality—

Shewing deaths from certain causes, classified according to Diseases, Ages and Localities.

TABLE III.—Infectious Disease—

Shewing new cases notified and new cases removed to Hospital classified according to Diseases and Localities and giving particulars as to Isolation Hospital Provision.

NOTE.—The information in these Tables is derived from the returns made by the District Medical Officers of Health on Forms supplied to them by the Local Government Board. The proportion of persons per acre, the deaths from the seven principal zymotic diseases and corresponding death-rates have been added. The population in 1911 and the areas, are from the Report of the Census, 1911.

TABLE I. STATEMENT

prepared from the Reports of Medical Officers of Health of Sanitary Districts in the Administrative County of Chester,
for the year ending 31st December, 1913.

SANITARY DISTRICTS	Population at Census, 1911.	Estimated Population in middle of 1913.	Area in Acres.	Persons to an Acre.	Births.	Birth- rate per 1000 Living.	Deaths.	Death- rate per 1000 Living.	Deaths from							Deaths from Principal Zymotic Diseases.	Principal Zymotic Diseases Death-rate.	Deaths under one year.	Deaths under one Year to 1000 Births.	Is Hospital Isolation for Infectious Diseases provided ?	Name of Medical Officer of Health.
Column Number ...	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
MUNICIPAL BOROUGHES.																					
Congleton	11309	11310	2572	4.39	276	24.4	183	16.1		1			25		4	30	2.63	36	130	Yes. West Heath Joint.	Dr. P. M. Davidson.
Crewe	44960	45652	2184	20.92	1011	22.1	530	11.6		6			5	1	17	38	.83	105	103	Yes. Crewe.	Dr. A. B. McMaster.
Dukinfield	19422	20000	1407	14.21	518	25.9	310	15.5		1	6	1	5	2	39	54	2.7	72	139	Yes. Hyde.	Dr. J. R. S. Park.
Hyde	33137	33922	3079	11.01	726	21.4	522	15.3		4		4	3	6	15	32	.94	110	152	Yes. Hyde.	Dr. J. Bennett.
Macclesfield	34797	34624	3214	10.77	701	20.8	512	15.2		1	8	3	7	1	7	27	.77	80	116	Yes. Macclesfield.	Dr. J. H. Marsh.
Stalybridge	26513	26773	3132	8.54	611	22.7	484	18.0		4	3	1		4	31	43	1.6	90	147	Small-pox only, Hartshead.	Dr. W. J. Hancock.
	170438	172281	15588	11.05	3843	22.3	2541	14.74		17	17	18	45	14	113	224	1.3	493	128		
OTHER URBAN DISTRICTS.																					
Alderley Edge	3143	3182	678	4.69	42	13.1	30	9.4					1			1	.31	2	47	Yes. Monsall.	Dr. G. W. Dowling
Alsager	2743	2743	2241	1.22	53	19.3	45	16.4					1		3	4	1.45	7	132	Yes. West Heath Joint.	Dr. H. F. Kingston.
Altrincham	17813	18073	662	27.2	399	22.0	262	14.4		2			8		13	23	1.27	44	110	Yes. Altrincham.	Dr. A. Golland.
Ashton-upon-Mersey	7234	7750	1623	4.77	171	22.6	89	11.4		7		1		1	5	14	1.8	13	75	Yes. Monsall.	Dr. C. J. Renshaw
Higher Bebington	1689	1724	699	2.46	42	24.3	25	14.5							2	2	1.16	4	95	Yes. Wirral Joint.	Dr. J. B. Yeoman.
Lower Bebington	11401	12120	1051	11.53	370	30.5	148	12.2	1	1		4	2		7	15	1.23	40	168	Yes. Ditto.	Dr. J. B. Yeoman.
Bollington	5224	5225	1291	4.04	105	21.0	72	13.7				1	1	1	1	4	.76	14	133	Yes. Macclesfield.	Dr. D. W. Main.
Bowdon	3044	3050	850	3.58	29	9.4	42	13.6							1	1	.33	1	34	Yes. Altrincham.	Dr. M. Duggan.
Bredbury and Romiley	8683	9063	3990	2.27	169	18.0	116	11.6		2		2	1	1		6	.66	13	76	Yes. Hyde.	Dr. F. Cant.
Bromborough	1974	1993	1678	1.18	29	14.5	19	9.5										3	103	Yes. Wirral Jt. and Pool Works.	Dr. J. B. Yeoman.
Buglawton	1438	1439	2911	.49	45	31.3	27	18.7					4			4	.27	3	66	Yes. West Heath Joint.	Dr. P. M. Davidson.
Cheadle and Gatley	9913	11060	5087	2.17	187	18.6	121	11.9							4	4	.36	17	90	Yes. Monsall and Small-pox Hospital.	Dr. J. H. Godson.
Compstall	908	912	903	1.0	19	21.0	13	14.0										3	157	Yes. Hyde.	Dr. C. H. Hibbert.
Ellesmere Port & Whitby	10366	11825	3451	3.42	481	40.6	135	11.4		8	2	7			7	24	2.02	48	99	Yes. Wirral Joint.	Dr. J. B. Yeoman.
Hale	8351	9261	1288	7.19	141	15.2	92	9.9			1				2	3	.32	18	127	Yes. Monsall.	Dr. T. A. Rothwell.
Handforth	934	936	1311	.71	27	28.8	14	14.9					1		1	2	2.13	3	111	No.	Dr. A. Nowell.
Hazel Grove and Bramhall	9631	10546	5447	1.9	167	15.7	126	11.9				2	2		5	9	.85	25	149	Yes. Hyde.	Dr. Thos. Moore.
Hollingworth	2580	2581	2086	1.23	54	20.9	37	14.3										3	55	Small-pox, Mottram Moor.	Dr. R. Pomfret Wylde
Hoole	5929	5964	334	17.85	143	26.0	61	11.0			1	2			2	5	.83	13	90	Yes. Chester.	Dr. F. J. Butt.
Hoylake and West Kirby	14029	14776	2066	7	247	16.7	173	11.7		1	1			1	3	6	.41	17	68	Yes. Wirral Joint.	Dr. J. B. Yeoman.
Knutsford	5760	5831	1760	3.31	120	23.0	58	10.8										8	67	Yes. Monsall.	Dr. T. W. H. Garstang.
Lymm	4989	5057	4374	1.15	105	20.8	66	13.1			1	3	2			6	1.19	11	105	Yes. Lymm.	Dr. E. M. de Jong.
Marple	6483	6500	3055	2.12	91	14.0	67	10.3				2			1	3	.46	12	133	Yes. Hyde.	Dr. H. Burton.
Middlewich	4909	4941	1082	4.56	129	25.8	61	12.2							1	1	.20	15	116	Yes. Northwich Joint and Marbury.	Dr. S. L. Melville.
Mottram	3049	3049	1084	2.81	49	16.0	51	16.7										5	102	Yes. Hyde and Small-pox, Mottram Moor.	Dr. G. J. Awburn.
Nantwich	7815	7838	703	11.14	162	20.6	123	15.6		9		2			4	15	1.91	21	129	Yes. Alvaston Joint.	Dr. J. D. Munro.
Neston and Parkgate	4596	4701	3267	1.43	121	25.7	55	11.6		2		2			5	9	1.91	12	99	Yes. Wirral Joint.	Dr. J. B. Yeoman.
Northwich	18151	18660	1398	13.34	491	26.0	269	14.4		13	1	5		1	13	33	1.76	67	137	Yes. Northwich Joint and Marbury.	Dr. H. E. Gough.
Runcorn	17353	18000	1275	14.11	474	26.3	284	15.7		3		15		1	23	42	2.33	52	109	Yes. Runcorn.	Dr. F. McDougall.
Sale	15044	15700	2006	7.82	316	20.1	168	10.7		6			5		3	14	.22	36	113	Yes. Monsall.	Dr. H. Miall Woodhead.
Sandbach	5723	5723	2694	2.12	134	23.4	83	14.5		10					3	13	2.33	12	89	Yes. West Heath Jt. & Arclid for Smallpox.	Dr. R. Riddell.
Tarpoley	2604	2595	6195	.41	62	23.8	36	13.8		2					3	5	1.92	8	129	Yes. Chester.	Dr. W. E. Burton.
Wilmslow	8153	8300	5090	1.63	151	18.2	110	13.2		1	1		1		2	5	.60	11	72	Yes. Monsall.	Dr. A. Byers.
Winsford	10770	10850	5779	1.87	255	23.5	151	13.1		3		6		1	10	20	1.84	37	145	Yes. Davenham and Marbury.	Dr. T. W. H. Garstang
Yeardsley-cum-Whaley	1659	1694	1323	1.28	34	20.0	12	7.0							1	1	.59	1	29	Yes. Hyde and High Peak.	Dr. F. G. Allan.
	244085	253662	80732	8.14	5614	22.13	3241	12.77	1	70	8	54	29	8	124	294	1.11	599	106		
RURAL DISTRICTS																					
Bucklow	22368	23511	57656	.40	374	16.5	212	9.7					4		6	14	.59	34	91	Yes. Monsall.	Dr. T. W. H. Garstang.
Chester	12447	12794	34266	.37	213	16.6	117	9.1		2	2		3		3	7	.54	13	61	Yes. Chester.	Dr. W. E. Burton.
Congleton	12821	12845	40152	.31	321	24.9	165	12.8				1	1		1	5	.39	20	82	Yes. West Heath Joint.	Dr. C. H. Wentworth-Bennett
Disley	2958	2988	2466	1.21	67	22.4	34	11.3										4	59	Yes. Hyde.	Dr. G. B. Pemberton.
Macclesfield	16628	16835	79495	.21	295	17.5	182	10.8				1	4		1	14	.83	18	81	Yes. Macclesfield and Higher Sutton	Dr. R. Proudfoot.
Malpas	4643	4678	21406	.21	109	23.3	55	11.7										8	73	Yes. Chester. [for Small-pox.	Dr. W. E. Burton.
Nantwich	24995	25328	98467	.25	525	20.7	326	12.4		4			1	1	3	9	.35	44	83	Yes. Nantwich Joint and Small-pox.	Dr. R. T. Turner.
Northwich	23270	23760	54308	.43	558	23.5	283	11.9		4		2			9	15	.63	48	86	Yes. Northwich Joint.	Dr. H. E. Gough.
										4		5			10	17	.58	50	82	Yes. Ditton. Moore (Small-pox).	Dr. J. Adams.

TABLE II.—MORTALITY.

Showing deaths from subjoined causes during the year ending December 31st, 1913, classified according to Diseases and Localities.

DISEASES.	Enteric Fever.	Small-pox.	Measles.	Scarlet Fever.	Whooping cough.	Diphtheria and Croup.	Infan- tanza.	Erysipelas.	Phthisis (Pulmonary Tuberculosis).	Tuberculosis Meningitis.	Other Tubercu- losis Diseases.	Cancer, Malignant Disease.	Rheumatic Fever.	Meningitis.	Organic Heart Disease.	Brachitis.	Pneumonia (All forms).	Other Diseases of Respiratory Organs.	Diarrhoea and Enteritis.	Apoplexia and Typhitis.	Cirrhosis of Liver.	Alcoholism.	Nephritis and Bright's Disease.	Puerperal Fever.	Other Accidents and Diseases of Pregnancy and Parturition.	Obduracy, Dolour and Malformation noting Premature Birth.	Violent Deaths, excluding Suicides.	Suicide.	Other Defined Diseases.	Diseases Ill- defined or Unknown.		
SANITARY DISTRICTS																																
Municipal Boroughs.																																
Congleton .....	...	...	1	...	35	...	2	...	10	3	1	12	1	1	23	13	13	...	4	...	1	...	4	1	...	7	2	...	59	...	...
Croze	1	...	6	...	5	9	3	1	25	8	18	44	2	3	48	49	27	12	17	1	9	1	9	3	4	53	18	1	152	1	...	
Dukinfield	2	...	1	6	5	1	5	...	20	5	2	12	2	3	30	24	21	3	39	2	3	...	11	2	3	16	11	...	81	...	...
Hyde	6	...	4	...	3	4	5	1	24	4	8	40	3	8	48	65	32	1	15	3	4	2	13	2	3	61	16	3	100	44	...	
Macclesfield	1	...	1	9	7	3	2	...	32	6	7	40	1	5	78	31	27	...	11	3	6	2	19	...	6	23	11	...	174	9	...	
Stalybridge	4	...	4	3	...	1	...	...	32	2	8	36	2	5	46	63	38	2	31	4	5	...	12	3	2	22	9	5	143	2	...
	14	...	17	18	45	18	17	2	143	28	44	184	11	25	273	245	158	18	117	13	28	5	68	11	18	182	67	9	709	56	...	
Other Urban Districts.																																
Alderley Edge.....	...	...	...	1	...	...	...	...	3	...	1	2	...	1	4	1	3	...	...	2	1	1	...	...	...	1	2	1	6	...	...
Alsager .....	...	...	...	1	...	...	...	...	3	...	1	2	...	...	5	1	3	1	3	...	2	...	...	...	...	2	1	1	19	...	...
Altrincham .....	...	...	2	8	...	5	...	...	14	2	2	18	1	3	33	22	17	3	13	1	2	...	10	2	...	14	8	3	40	26	...
Ashton-upon-Mersey	1	...	7	...	...	1	1	...	5	3	2	4	...	...	6	8	...	4	5	...	2	1	5	...	...	5	3	3	7	6	...
Higher Bobington .....	...	...	...	...	...	...	...	...	3	1	2	1	...	...	3	1	1	...	2	...	2	...	...	...	...	4	...	...	...	...	...
Lower Bebington .....	...	1	1	...	2	4	1	...	12	2	3	8	3	...	12	9	10	...	7	...	2	4	5	1	1	21	9	2	23	5	...
Bollington	1	...	...	...	1	1	1	...	5	...	...	4	1	2	9	8	3	...	1	1	...	...	1	...	...	7	4	...	23	...	...
Bowdon	1	...	...	...	...	...	...	...	4	...	...	9	...	...	3	2	1	...	...	...	...	1	...	1	...	...	...	2	18	...	...
Bredbury and Romiley	1	...	2	...	1	2	...	...	5	5	3	9	...	...	17	13	9	...	...	...	1	...	...	1	...	6	4	...	27	7	...
Bromborough .....	...	...	...	...	...	...	...	...	1	...	...	1	...	...	2	1	2	...	...	1	...	...	...	...	...	3	3	...	4	...	...
Buglawton .....	...	...	...	4	...	...	...	...	1	1	1	1	...	...	2	1	2	...	...	...	...	...	...	...	...	1	3	...	9	1	...
Cheadle and Gatley .....	...	...	...	...	...	...	1	1	6	2	...	10	...	1	7	15	3	1	4	2	...	9	1	...	...	5	6	2	45	...	...
Compstall .....	...	...	...	...	...	...	...	...	...	...	...	...	...	...	2	3	1	...	...	...	1	...	...	...	1	1	...	1	...	3	...
Ellensmere Port and Whitty .....	...	8	2	...	7	2	...	...	6	3	2	5	...	...	10	8	17	...	7	2	...	2	...	3	18	8	1	19	5	...	...
Hale .....	...	...	1	...	...	...	...	...	3	...	1	11	...	...	13	7	8	...	2	...	1	...	2	...	...	6	...	...	35	2	...
Handforth .....	...	...	...	1	...	...	...	...	...	...	1	1	...	...	1	3	1	...	1	1	...	...	1	...	...	...	...	...	...	3	...
Hazel Grove and Braughall .....	...	...	...	2	2	...	...	...	7	...	7	14	...	1	15	7	13	1	5	...	1	...	4	...	1	11	4	...	31	...	...
Hollingworth .....	...	...	...	...	...	...	...	...	1	...	...	2	...	...	...	3	5	1	...	...	...	...	...	...	...	1	...	...	24	...	...
Hooles .....	...	...	1	...	2	...	...	...	5	...	...	4	...	...	6	5	4	...	2	...	1	1	1	...	...	6	2	...	21	...	...
Hoylake and West Kirby.....	1	...	1	1	...	2	...	...	11	1	3	23	1	...	27	7	10	...	3	2	1	...	9	...	1	15	6	1	39	8	...
Knutsford .....	...	...	...	...	2	...	...	...	4	...	3	1	...	...	8	4	1	...	...	...	1	3	...	...	...	6	1	1	23	...	...
Lymm .....	...	...	1	2	3	1	...	...	4	...	1	9	...	...	11	6	4	...	...	...	1	...	1	...	1	6	4	...	9	2	...
Marple .....	...	...	...	2	1	...	...	...	1	...	2	5	1	...	10	10	1	...	1	...	1	1	...	1	6	2	2	20	...	...	...
Middlewich .....	...	...	...	...	...	...	...	...	2	...	2	3	...	...	6	2	3	...	1	3	1	...	3	...	...	8	4	1	22	...	...
Mottram .....	...	...	...	...	...	...	...	...	2	...	2	...	...	...	10	5	2	...	...	...	1	...	1	...	...	4	...	...	22	...	...
Nantwich .....	...	9	...	...	2	...	...	...	10	1	...	7	...	1	22	7	2	3	4	...	1	1	1	...	...	7	2	2	41	...	...
Neston and Parkgate .....	...	2	...	...	2	...	...	...	5	3	2	9	1	...	6	...	2	...	5	...	...	1	...	...	...	6	2	...	7	2	...
Northwich	1	...	13	1	...	5	2	...	15	2	3	12	2	2	20	18	13	4	13	2	4	2	7	...	1	34	7	...	86	...	...
Runcorn	1	...	3	...	...	15	1	...	20	7	7	13	...	4	25	26	18	1	23	...	...	1	6	...	...	21	15	2	61	2	...
Sale .....	...	5	...	5	...	4	...	...	11	2	1	22	1	1	10	12	14	5	6	...	2	3	...	3	9	7	1	41	3	...	...
Sandbach .....	...	10	...	...	...	1	...	...	3	...	4	7	...	...	6	5	6	...	3	...	...	...	2	...	...	7	3	...	17	9	...
Tarporley .....	...	2	...	...	...	...	...	...	...	...	5	...	...	...	3	6	2	...	3	...	...	...	...	...	...	1	1	1	11	...	...
Wilmslow .....	...	1	1	1	...	1	...	...	5	...	2	15	...	3	14	7	3	2	2	...	2	...	3	...	2	2	5	1	26	12	...
Winsford	1	...	3	...	6	...	3	...	4	1	...	16	1	1	21	10	9	1	10	5	1	...	1	...	1	5	9	1	41	...	...
Yeardsley-cum-Whaley	2	2	1	1	1	1	4
	8	1	69	8	29	54	26	4	181	36	54	258	13	20	351	244	193	28	126	20	26	15	91	5	18	249	127	28	832	91	...	
Rural Districts.																																
Bucklow .....	...	...	2	2	4	...	1	...	11	2	6	15	...	4	29	10	14	5	6	2	4	...	6	1	1	10	6	1	70	...	...
Chester	3	1	2	...	8	1	1	6	16	7	12	...	3	1	...	2	...	1	...	1	9	3	1	34	6	...
Congleton .....	...	...	...	3	1	...	2	...	5	1	3	13	1	3	19	9	18	...	1	1	1	1	5	2	...	11	10	1	53	1	...
Disley .....	...	...	...	...	...	...	...	...	2	...	...	3	...	...	3	4	2	1	...	1	1	1	1	1	...	2	2	...	8	2	...
Macclesfield .....	...	...	...	1	8	4	2	...	5	...	4	23	...	3	32	12	7	3	1	2	...	1	6	1	3	6	3	1	52	2	...
Marpas .....	...	...	...	...	...	...	...	...	...	...	1	6	...	4	7	2	1	...	...	2	...	1	5	...	1	5	...	1	16	2	...
Nantwich	1	...	4	...	1	...	8	1	10	5	2	47	1	1	49	16	23	2	3	1	4	...	...	...	1	22	17	4	74	29	...
Northwich .....	...	...	...	...	2	2	...	...	14	...	5	18	2	1	30	12	21	1	9	3	3	2	10	...	2	28	16	2	95	1	...
Runcorn .....	...	1	1	...	5	5	...	...	18	8	14	17	...	1	32	8	30	2	10	4	1	4	1	...	7	13	12	3	108	...	...
Tarvin .....	...	...	1	...	1	1	...	...	7	4	1	12	...	3	21	19	12	...	1	...	...	1	6	...	...	4	7	1	44	22	...
Tintwistle .....	...	...	...	2	1	1	...	...	2	...	...	1	...	1	4	2	3	1	...	...	...	...	...	...	...	4	...	...	12	...	...
Wirral	1	...	1	2	1	...	3	...	22	1	2	19	...	...	22	14	15	3	6	2	6	2	3	2							

TABLE III.—INFECTIOUS DISEASE.

Showing cases notified and cases removed to Hospital during the year ending December 31st, 1913, classified according to Diseases and Localities, and giving particulars as to Isolation Hospital Provision.

SANITARY DISTRICTS.	Number of cases notified in each District.											Number of cases removed to Hospital from each District.											Is Hospital Isolation provided?	
	Small-pox.	Diphtheria including Membranous Croup.	Erysipelas.	Scarlet Fever.	Enteric Fever.	Continued Fever.	Puerperal Fever.	Cerebro-Spinal Meningitis.	Poliomyelitis.	Pulmonary Tuberculosis.	Other forms of Tuberculosis.	TOTAL.	Small-pox.	Diphtheria including Membranous Croup.	Erysipelas.	Scarlet Fever.	Enteric Fever.	Puerperal Fever.	Poliomyelitis.	Pulmonary Tuberculosis.	Other forms of Tuberculosis.	TOTAL.		
Municipal Boroughs.																								
Congleton	8	10	19	3			2			10	30	82												Yes. West Heath Joint, Arclid for Small-pox.
Croce	157	22	82	3	1	3			1	59	58	386	137	3	70	2	3		4			219	Yes. Croce.	
Dukinfield	6	13	105	13			1			30	25	193	1		1	4						6	Yes. Hyde.	
Hyde	32	64	95	18			3			26	11	249	22	1	79	9						111	Yes. Ditto.	
Macclesfield	23	21	296	31						78	56	505	15		185	15			8			224	Yes. Macclesfield.	
Stalybridge	4	14	41	10			1			61	23	154			4							4	Small-pox only, Hartshead.	
	230	144	638	78	1	10			1	264	203	1569	175	4	340	30	3		12			564		
Other Urban Districts.																								
Alderley Edge	3	4	5				1			5	1	19	3		1				2			6	Yes. Monsall and Clayton for Small-pox.	
Alsager			2							7	3	12											Yes. West Heath Joint.	
Altrincham	6	6	38	5			2			35	15	107	5		38	3						46	Yes. Altrincham.	
Ashton-upon-Mersey		4	5	1				1		18	8	37				1						1	Yes. Monsall.	
Higher Bebington	6	3	3							1	1	14	5	1	3				1			10	Yes. Wirral Joint.	
Lower Bebington	56	10	39				1			25	20	151	53		37				17	11		118	Yes. Ditto.	
Bollington	3		1	1						2		7	1			1						2	Yes. Macclesfield.	
Bowdon	1	1	4	9						5	2	22											Yes. Altrincham.	
Bredbury and Romiley	21	8	22	3						7	8	69	6		6	1			1	5		19	Yes. Hyde.	
Bromborough	7	2	12							2	3	26	5	1	10					3		19	Yes. Wirral Joint.	
Buglawton										4	1	5											Yes. West Heath Joint, Arclid for Small-pox.	
Cheadle and Gatley	9	3	25	5					1	11	13	67	2	1	7	5						15	Yes. Monsall.	
Compstall	1	2	3	2								8			3	1						4	Yes. Hyde.	
Ellesmere Port and Whitby	43	8	54							26	15	146	27		47			7	2			83	Yes. Wirral Joint.	
Hale	12		14	8						12	4	50	8		5	1						14	Yes. Monsall.	
Handforth										1	2	3											No.	
Hazel Grove and Braunhall	3	4	20	2					1	15	12	57											Yes. Hyde.	
Hollingworth	2		1							1	1	5											Small-pox, Mottram Moor.	
Huole	8	7	9				1			13	5	43	5		5							10	Yes. Chester.	
Hoylake and West Kirby	11	6	39	2					7	21	25	111	6	1	36	1		4	4	5		57	Yes. Wirral Joint.	
Knutsford	4	2	1	1			1			11	7	27	3			1	1		3			8	Yes. Monsall.	
Lymm	34	5	8				1			9		57	22		5							27	Yes. Lymm.	
Marple	4	4	7									15	3		2							5	Yes. Hyde.	
Middlewich	6	1	4	2						8	4	25	3		2				2			7	Yes. Davenham and Marbury Joint.	
Mottram										3	3	6											Yes. Hyde and Mottram Moor.	
Nantwich	6	3	2							16	6	33	3		1							4	Yes. Nantwich Joint. Small-pox.	
Neston and Parkgate	6		1							23	16	46	5		1							6	Yes. Wirral Joint.	
Northwich	43	6	23	10			1		1	26	11	121	15		11	10			2			38	Yes. Northwich Joint and Marbury.	
Runcorn	102	12	12	5						25	135	291	4			2						6	Yes. Runcorn.	
Sale	3	13	17	1						34	7	75							7	2		9	Yes. Monsall.	
Sandbach	4	2	10							4	2	22	3		8							11	Yes. West Heath Joint, Arclid for Small-pox.	
Tarporley			6							2		8			3							3	Yes. Chester.	
Wilmslow		2	14	1			1			8	8	34			8		1		1			10	Yes. Monsall.	
Winsford	120	19	16	4			2		2	11	8	182	101		12	4			3			120	Yes. Davenham and Marbury	
Yeardley-cum-Whaley			1							1	3	5			1							1	Yes. Hyde and High Peak.	
	524	137	418	62		11		1	12	392	349	1906	288	4	252	31	2	11	45	26		659		
Rural Districts.																								
Bucklow	16	6	67	2						28	15	134	12		52	1			11			76	Yes. Monsall.	
Chester	12	1	9	1						19	11	53	11		4							15	Yes. Chester.	
Congleton	17	3	59	2					2	16	11	110	15		42	1			3			61	Yes. West Heath, Arclid for Small-pox.	
Disley	1	1		1			1			7	4	15											Yes. Hyde.	
Macclesfield	26	1	45				2	1	1	5	9	90	8		31							39	Yes. Macclesfield and Higher Sutton for Small-pox.	
Malpas	1		17	1						1	1	21			1							1	Yes. Chester, Whitechurch for Small-pox.	
Nantwich	15	11	29	1						24	16	96	13		21	1			6	4		45	Yes. Nantwich Joint and Small-pox.	
Northwich	36	6	38	1						20	10	111	12		22							34	Yes. Leftwich.	
Runcorn	51	15	61	3				1		50	43	224	38		38	1						77	Yes. Dutton. Moore (Small-pox).	
Tarvin	1	18	1	23						8	1	52	1	14	3							18	Yes. Chester.	
Tintwistle	3		1							2	1	7											Yes. Mottram.	
Wirral	13	6	53	1						34	22	129	8		42				5	8		63	Yes. Wirral Joint.	
	1	209	51	402	13		3	1	4	214	144	1042	1	131		256	4		25	12		429		
Administrative County	1	963	332	1458	153	1	24	2	17	870	696	4517	1	594	8	848	65	5	11	82	38	1652		



